

TI 2100/2100A VHF-FM RADIOTELEPHONE

OWNERS MANUAL



TEXAS INSTRUMENTS
INCORPORATED

YOUR OWNERS MANUAL

Your manual covers operational and owner data for the use of your Texas Instruments 2100/2100A Radiotelephone. The TI 2100 has been FCC type accepted for maritime shipboard service, while the 2100A has been type accepted for both the maritime shipboard and land service. Both units are identical in operation, and are referred to synonymously in the text of this manual as the TI 2100.

LICENSE REQUIREMENTS.

You will need two Federal licenses, ship station and operator, for the use of your marine radiotelephone unit. They are both issued by the Federal Communications Commission. Application forms for each license are provided with your radio. For detailed information concerning these licenses, refer to Appendix D.

CAUTION

All transmitter adjustments must be performed by an FCC licensed technician, holding at least a current second class radiotelephone license.

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PRINTED IN USA

MANUAL P/N 2042983-1

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SAMPLE LOG SHEET

WARRANTY

I. GETTING ACQUAINTED—A QUICK LOOK

WELCOME ABOARD.

Your new TI 2100 Marine Radiotelephone is the finest marine transceiver available. It has been designed using all solid-state devices to give you years of trouble-free operation. The 25-watt marine radiotelephone uses advanced frequency synthesis techniques to provide all maritime channels (U.S. and International) for pleasure and commercial use with only one crystal. In addition, for authorized Coast Guard members, U.S. channels 21, 23, 81, 82, and 83 are available for transmission. The unit is compact, weatherproof, easy to install, and features an antitheft (lockable) mounting tray.

By pressing two keys, your radio is immediately ready for operation on any channel you select. The unit automatically selects the unique simplex, duplex, or receive-only operation appropriate to that channel. In addition to the standard marine channels, four weather channels are provided for complete weather coverage.

The selected channel number is displayed on a large easy-to-read digital display, which may be read easily even in bright sunlight. Display brightness adjusts automatically to maintain maximum readability under any lighting condition. Additional display indicators provide transmitter and frequency synthesizer operational status. In the event that keys for an unassigned channel are pressed, the display will flash the number **"9.9."** to indicate that a wrong entry has been made.

Several new features to increase operational flexibility are provided by the TI 2100.

The first new feature is a programmable scan, which allows the operator to monitor any selected marine channel and channel 16. Using this mode simply requires entry of the desired channel to be scanned and pressing the **SEL** and **0** keys. Scan is automatic whenever the microphone remains on its hanger. Should communications occur on either the selected channel or channel 16, then the transceiver pauses, allowing you to monitor the message. The transceiver will wait approximately 8 seconds after the received message, allowing you to initiate a response. Should you respond, after completion of your conversation, hang the microphone up and scan is automatically restored without further operator interface. If the microphone is removed from its hanger to initiate a call (rather than responding to a call), the TI 2100 radiotelephone will automatically switch to channel 16, the calling channel. This feature allows you to monitor your favorite channel while maintaining a safety watch on channel 16.

Automatic selection of 1 watt on channels 13, 15, and 17 is a second new feature provided for the operator. The FCC rules specifically require operation in the 1-watt mode on these channels.

Also a full-function remote option (TI 2110) is available for use with your TI 2100 radiotelephone. This allows control and communications capability from two locations aboard a vessel. Refer to Section III for a complete list of Optional Units and Accessories that are available.

The TI 2100 may be mounted in any position, either horizontal or vertical. For bulkhead and overhead mounting, the radio chassis may be removed from the

case, the front panel tilted in the opposite direction, and the chassis replaced in the case. The front panel is now tilted for easy operation and viewing when the unit is mounted. Complete instructions for mounting and panel reversal are given in Section III, Installation.

COMMUNICATIONS.

The VHF-FM marine radiotelephone system with the designated distress, safety, and calling frequency, channel 16, is designed to provide a monitored distress and safety channel. The radio regulations ensure that a maximum number of stations will be listening at any given time by designating the distress and safety channel the same as the calling channel. The success of this arrangement depends on the cooperation of all users to maintain a listening watch on channel 16 and to keep this channel clear of all unnecessary communication.

The TI 2100 VHF-FM marine radiotelephone also provides:

1. Channels for communication between your vessel and local and Federal agencies.
2. Channels for the exchange of information pertaining to navigation, movement, or management of vessels.
3. Special channels for stations and vessels engaged in commerce.
4. Noncommercial channels for the special needs of recreational boating people.
5. Separate channels for vessels to communicate with shore telephone systems.

VHF-FM MARINE RADIO FREQUENCIES AND CHANNELS.

The VHF-FM marine radiotelephone system is divided into a number of channels (specific frequencies), with certain types of communications allowed for each channel. Some channels are simplex (you transmit and receive on the same frequency), while other channels are duplex (transmit and receive frequencies are different). The frequencies and use of some of these channels in U.S. waters differ from the use in International waters.

If all this sounds complicated, it need not be. Your radiotelephone automatically selects proper frequencies for either U.S. or INT (International) depending on which mode you select. Also your transmitter is automatically inhibited on certain receive-only channels. Tables supplied in Appendix A provide channel usage for all U.S. and International channels. Separate columns for "SHIP TO SHIP" and "SHIP TO COAST" usage are provided for quick reference. The "USAGE" column provides additional information. Also, as mentioned previously, the transceiver automatically selects 1 watt transmission power for channels 13, 15, and 17, which is the maximum allowed by the FCC on these channels.

When studying the tables, you will note that some channels are identified twice except that one channel is followed by an "A". These are the channels where usage differs between U.S. and International waters; the A identifies the U.S. channel and its usage. A waterproof channel usage card with this information is furnished for posting close to your set for ready reference.

All units are shipped from the factory pre-set for Receive Only operation when operating on channels 21, 23, 81, 82, and 83 in the U.S. mode of operation. If you are authorized to use these channels (Coast Guard or Coast Guard Auxiliary and certain other U.S. Government organizations), the unit can be easily changed to transmit on these channels by your Texas Instruments marine electronics dealer.

VHF-FM SERVICE (PUBLIC CLASS III-B COAST STATIONS).

The VHF-FM channels offer reliable operation with high quality transmission capabilities for short-range communications (20 to 50 miles). A vast network of public coast stations provides coverage of coastal waters, most inland waterways, and lakes of the Continental United States. Appendix B contains a list of these stations by location and provides their call sign and operating channels. Continued activity in new station construction as well as changes to existing stations make this list subject to frequent changes. Channels 24 through 28 and 84 through 87 are available for public coast stations in the United States; of these, channels 26 and 28 are the most frequently used.

MARINE WEATHER SERVICE.

NOAA Weather Radio is a service of the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce. It provides continuous, around-the-clock broadcasts of the latest weather information directly from National Weather Service Offices. Taped weather messages are repeated every 4 to 6 minutes and are revised every 2 to 3 hours or more frequently if needed.

The broadcasts are tailored to weather information needs of people within the receiving area. For example, stations along the seacoasts and Great Lakes provide specialized weather information for boaters, fishermen, and others engaged in marine activities, as well as general weather information.

During severe weather, National Weather Service forecasters can interrupt the routine weather broadcasts and substitute special warning messages.

For your convenience in selecting the weather station nearest you, a list of U.S. weather stations and their locations is provided in Appendix C. When completed in 1979, the NOAA Weather Radio network will provide continuous broadcasts of the latest local weather information at more than 340 locations across the United States. For more information or an updated listing on NOAA Weather Radio, you may write to: National Weather Service, 8060 13th Street, Silver Spring, Maryland 20910 (ATTN: W112).

LICENSE REQUIREMENTS.

You will need two Federal licenses, ship station and operator, for the use of your marine radiotelephone unit. They are both issued by the Federal Communications Commission. Application forms for each license are provided with your radio. For detailed information concerning these licenses, refer to Appendix D.

GENERAL DESCRIPTION—A TECHNICAL LOOK.

Your TI 2100 VHF-FM radiotelephone utilizes state-of-the-art solid state integrated circuits along with a microcomputer that automatically controls operation of the transceiver to prevent inadvertent violation of

FCC rules concerning frequency selection, power level, and receive only channels. The microcomputer also provides programmable channel scan, which greatly simplifies and improves monitoring of the safety channel 16 as well as the operator programmed channel. The unit is fully synthesized with all U.S. and INT channels in the VHF marine band. RF power output is switchable to a maximum of either 25 watts or 1 watt. Audio output is 5.0 watts. Standard input voltage is 13.6 volts dc, negative ground. (This is the normal output of a fully charged 12-volt battery.)

Physical. The case of the TI 2100 is made of a weatherproof, high-impact plastic. All operating controls are on the front panel. Individual jacks for connecting an external speaker and public address speaker are located at the rear of the unit. Another rear jack is provided for connecting the optional handset hanger whenever it is used. The fourth jack provides a high (8.5 Vdc) level when the push-to-talk (PTT) switch is pressed and a low (0 Vdc) when the PTT switch is released. This signal may be used to drive a TTL buffer to control, mute, or silence a second radiotelephone or other electronic equipment when the TI 2100 is transmitting, if desired.

SPECIFICATIONS.

The following specifications are included for reference only. They provide an overview of system capabilities; however, it is not necessary that the more technical items be understood for operation.

Power Input:

- 13.6 Vdc negative ground: Unit is operable with input voltages from 11 to 16 volts.
- Receive (no signal): Less than 0.65 ampere at 13.6 volts. Receive (with signal and maximum volume) less than 2.0 amperes at 13.6 volts.
- Transmit: Less than 5.5 amperes at 13.6 volts.

Controls:

- Volume with ON-OFF power switch
- Squelch
- PA/1/25
- INT/US
- Keyboard (12 keys)

Physical Characteristics:

- Height 3.4 inches (8.6 cm)
- Depth 12.5 inches (31.75 cm)
- Width 9.7 inches (24.6 cm)
- Weight 9.0 pounds (4.08 kg)

Display Brightness:

Automatically controlled for optimum viewing in any lighting condition, including direct bright sunlight.

Transmitter:

- Power Output:
Maximum of 25 watts or 1 watt, selectable.
Automatic 1 watt selection on channels 13, 15, and 17.
- Frequency Stability:
TI 2100: $\pm 0.001\%$ shipboard only.
TI 2100A: $\pm 0.0005\%$ land or shipboard.

- Frequency Deviation: ± 5 kHz maximum.
- Spurious Emissions: Less than 2.0 micro-watts.
- Distortion: Less than 10%.
- Transmissions automatically inhibited on unassigned or "Receive Only" channels.

Receiver:

- Sensitivity:
 - 20 dB quieting
 - 0.35 μ V typical
 - 0.5 μ V maximum.
 - SINAD, 12 dB
 - 0.25 μ V typical
 - 0.35 μ V maximum.
- Selectivity, Adjacent Channel: Better than 70 dB.
- Image Rejection: Greater than 65 dB.
- Audio Output: 5 watts minimum at 13.6-V input with less than 10% distortion.

Operating Temperature:

- -20° to 50°C (-4° to 122°F).

All specifications in accordance with EIA* Standards.

*Electronic Industries Association.

II. OPERATION—A LOOK AT FEATURES, FUNCTIONS AND USE

GETTING UNDER WAY.

This portion of your manual is divided into two parts. The first provides a description and use of each control, indicator, and connector, along with a picture (figure 2-1) of the unit's front and rear panels. The second part provides general operating instructions. It is assumed that your radiotelephone is installed at this point. If not, refer to Section III, Installation.

CONTROLS AND INDICATORS.

VOLUME ON/OFF. The knob marked "VOLUME" on the front panel is a combination power switch and volume control. When this knob is rotated fully counterclockwise, the radio is turned off. When first turned on, the unit will display "16", indicating that channel 16 has been selected automatically. Rotating the VOLUME control in a clockwise direction increases the receiver audio volume.

SQUELCH. The SQUELCH control permits receiver background noise to be muted in the absence of a received signal. Your receiver is equipped with a unique "SOFT" SQUELCH control, which has the advantage of eliminating most of the background noise without eliminating weak signals. With the SQUELCH control fully counterclockwise, adjust the VOLUME control for desired listening level (if no signal is being received, only background noise will be heard). Now rotate the SQUELCH control in a clockwise direction until the background noise is just eliminated. The unit will now remain silent until a signal is received.

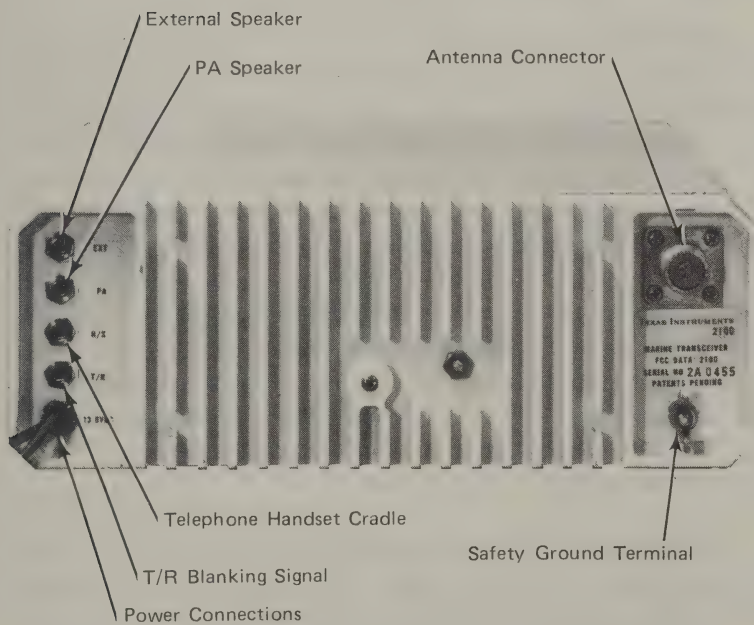
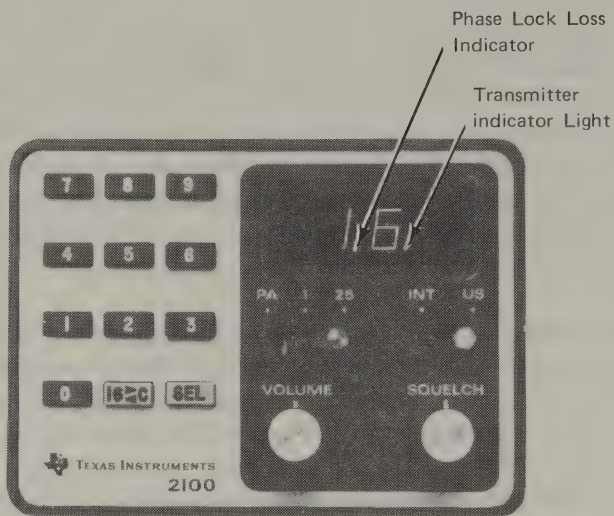


Figure 2-1. Controls, Indicators, and Connectors


For weak signal reception, the soft squelch feature may be utilized by turning the SQUELCH control slightly counterclockwise from the point where the receiver is completely silent. This allows background noise to be reduced while permitting weak signals to be received. The SQUELCH control also effects operation of the programmable scan feature as explained later in this section.

INT/US. The toggle switch just above the SQUELCH control is the "INT/US" switch. When operating within USA waters, this switch must be in the "US" position. For operation in International waters the "INT" position is selected. The unit automatically makes all necessary frequency and transmitter inhibit changes between U.S. and International waters, simply by changing the switch position.

PA/1/25. This mode switch is just above the VOLUME control and is used to select the operating mode of the radio. When in the "25" position, the transmitter power output will be within the legal maximum of 25 watts. When set to the "1" position, the transmitter output will be no more than 1 watt. On channels 13, 15, and 17 you can legally transmit on 1 watt only. The unit automatically sets to 1 watt for these channels even though you have the "25" position selected. The PA position of this switch allows you to use your radio as a public address system if you have connected an external PA speaker (refer to Section III for a complete list of available accessories) to the PA speaker jack on the rear of the radio.

Keyboard. All channel selection is done by means of the keyboard. When the unit is first turned on, the display will show channel 16. If you want to select another channel, simply press the two keys for the number of






the channel desired. For instance, to select channel 68, first press the **6** key and then press the **8** key. The display will now show 68 and you are ready to receive or to talk on that channel. Channels 1 through 9 must be entered with a leading zero and are, therefore, entered as **0** , **1** through **0** , **9** . Of course, you must make sure that the "INT/US" and the "PA/1/25" switches are in the appropriate positions.

After having selected a channel, if you wish to return to channel 16, it is only necessary to press the key marked **16**  **C** . The unit immediately reverts to channel 16. Press this key a second time, and the unit will revert back to the previously selected channel. Thus, this key allows you to switch back and forth between a selected channel and channel 16 by pressing a single key, which is a convenient feature for bringing a third party into the conversation.

The weather channels do not have a two-digit number to identify them. Since they are preselected channels, they are simply designated SEL-1, SEL-2, etc. The weather channel is selected by pressing the key marked **SEL** and then key **1** , **2** , **3** , or **4** , depending on which weather channel is desired. Thus, to select weather channel 2, press **SEL** then press **2** . The display will now show only a "2" in the units position with the tens position being blank. This contrasts with channel "02" which is selected by pressing the **0** key first and then pressing the **2** key. In this case, the display will show "02", indicating that channel 02 has been selected and not weather channel 2.

Also, you will notice that when you have selected a weather channel, the transmitter indicator light will be

flashing on and off. This indicates that the selected channel is a "Receive Only" channel and your radio is automatically prevented from transmitting on this channel. There are other "Receive Only" channels besides the weather channels, such as 15, 21, and 29 in the U.S. mode. Any of the "Receive Only" channels will automatically be inhibited from transmitting and the transmitter indicator light will flash. Whenever a legal transmit channel has been selected, such as "68", the transmitter indicator will not light when in the receive mode, but when the microphone push-to-talk switch is pressed to make a transmission, the light will come on and stay on as long as the PTT switch is depressed, thus indicating that you are transmitting.

Programmable Scan. The  key also allows you to enter a channel that you wish to monitor while maintaining watch on channel 16, the calling and emergency channel. After the radio is turned on and the SQUELCH control is rotated clockwise until no background noise is heard, you may enter your desired channel by pressing the two keys for the number of the channel desired. Then press the  key followed by the  key. Now, when the microphone is returned to its hanger, the unit will scan your selected channel and channel 16. If you receive a call on either channel, the unit will pause with the display indicating the calling channel for 8 seconds. If you respond, the unit will remain on the displayed channel until you return the microphone to its hanger. At that time, the unit again begins scanning your selected channel and channel 16. If you do not respond, the unit will resume scanning after the 8-second pause. You may change your selected scan channel at any time by entering the new channel number and pressing the  and  keys. The unit does not scan when the microphone is off its

hanger. Should you enter a new channel followed by SEL-0 in this case, then the unit will display 16 and will be monitoring channel 16. However, it will scan the channel you entered when the microphone is returned to its hanger. If you do not wish to scan while the microphone is on the hanger, enter any channel desired while the microphone is still on its hanger and the unit will monitor only the entered channel.

If a nonassigned channel number such as "53" is erroneously entered on the keyboard, the display will flash the number "9.9." on and off until a proper channel number has been entered.

If an error in channel selection such as "5" is made, two methods exist to arrive at the proper channel:


1. Press any digit key, **0** — **9**, to complete the sequence. The unit will flash "9.9." designating an unassigned channel. Reenter the proper channel in the normal sequence.

2. Press **16** key. This will automatically clear the system and the unit will be on channel 16. Reenter the proper channel in the normal sequence.

If for any reason the unit's synthesizer loses phase lock, and thus would not generate the correct frequency, two things happen. First, both the transmitter and the receiver are inhibited; that is, you cannot transmit a signal, and the receiver will not operate. Second, the phase lock loss indicator on the display will flash on and off to indicate that the synthesizer has lost phase-lock.

NOTE

The phase lock loss indicator always lights after the first key of a two-entry keyboard sequence is depressed. This is normal since the synthesizer is intentionally inhibited until the frequency sequence is complete. Also, it is normal for this indicator to flash momentarily when the push-to-talk switch is pressed or released.

Whenever the microphone is replaced in its hang-up bracket, the unit will revert to channel 16 regardless of which channel was selected previously; however, if the unit has been programmed to scan, then channel 16 and the programmed channel will both be monitored. This allows channel 16 to be monitored without having to switch back to it after completing your transmission on a working channel. Of course, you can select any other channel by means of the keyboard entry, or return to the previously selected channel by means of the 16  C key while the microphone is in its bracket.

Handset. Your TI 2100 comes with a dynamic microphone installed. If you should prefer to use a telephone type handset, it is available as an option (refer to Section III for a complete list of accessories). It can easily be installed following the instructions furnished with the handset, or your marine dealer can do it for you. The handset has the same high quality dynamic microphone as the original microphone supplied. All operating controls and functions are identical when using either the handset or the microphone.

OPERATING PROCEDURES.

The following paragraphs provide a guide to general operating procedures; however, it is recommended that you buy a copy of **Marine Radiotelephone**. This is a comprehensive authoritative handbook prepared by the Radio Technical Commission for Marine Services in cooperation with the Federal Communications Commission. Single copies may be purchased from: Radio Technical Commission for Marine Services, Post Office Box 19087, Washington, D.C. 20036. Single copy price was \$3.00 at the time this manual was published.

Maintain a Watch. Whenever your radio is turned on, maintain a listening watch on the distress and calling frequency channel 16.

Choose the Correct Channel. Each of the marine channels is authorized for a specific type of communication. Therefore, it is required that you choose the correct channel for the type of communications in which you wish to engage. Refer to the channel usage chart contained in Appendix A or the waterproof channel usage card supplied with the unit for channel usage information.

WARNING

THE USE OF OBSCENITY, INDECENCY, AND PROFANITY IS PROHIBITED. It is a criminal offense for any person to transmit communications containing obscene, indecent, or profane words, language, or meaning. **Whoever utters any obscene, indecent, or profane language by means of radio communication may be fined not more than \$10,000 or imprisoned not more than 2 years, or both.**

Radiotelephone Station Log. You are required by law to keep a log of certain radio transmissions. Number each page and make entries of watch periods, distress or disaster traffic and related items. A record of all maintenance to the unit should also be logged along with technician's license class, number and expiration date of his license. Sample log sheets are provided at the end of this manual.

GENERAL OPERATING PROCEDURES.

The marine VHF frequencies on which your TI 2100 operates are shared by many users. Common courtesy dictates that the following operating procedures be followed:

1. Be sure the channel is clear before transmitting.
2. Maintain a watch on channel 16 and use it as the initial calling channel.
3. Switch to a different (working) channel as soon as possible.
4. Keep all communications short; others may want to use the channel.
5. Hold the microphone approximately 3 inches from your mouth, press the push-to-talk switch on the microphone and speak clearly. Do not shout.
6. Identify your vessel; give your call sign and vessel's name at beginning and end of each transmission.

7. Use channels for purpose designated.
8. Watch your language. Use of profane or obscene language on the air is against the law.

DISTRESS PROCEDURES.

Channel 16 is the worldwide Distress, Safety, and Initial Calling Channel. All vessels with operating radios are required by law to monitor channel 16 when not transmitting. As this channel is also monitored by the U.S. Coast Guard, harbor masters, marinas, fuel docks and other shore stations, it ensures that the greatest number of people will be likely to hear an emergency call or a request for contact from another vessel.

Safety is the primary reason for having shipboard radio. There are three types of spoken emergency signals: DISTRESS, URGENCY and SAFETY. These calls must have ABSOLUTE PRIORITY. That is the reason for monitoring and transmitting on channel 16.

Distress Signal. The distress signal is MAYDAY and is to be used only if there is **immediate danger of loss of life or property**. When initiated, distress signals must be on the authority of the person responsible for the vessel or in charge at the time of distress. MAYDAY has PRIORITY over ALL other communications.

Urgency Signal. The urgency signal is PAN (pronounced PAHN). Use it only when the safety of the vessel or persons on it are in jeopardy. PAN has priority over all other communications with the exception of DISTRESS (MAYDAY) traffic.

Safety Signal. The safety signal is SECURITY (pronounced say-curitay). This signal is used for messages concerning the safety of NAVIGATION or giving important METEOROLOGICAL WARNINGS. SECURITY has priority over all communication except for DISTRESS and URGENCY traffic.

NOTE

Remember MAYDAY and PAN are for use when you or someone else needs help. SECURITY is to warn others of danger and no help is required.

MAKING SHIP-TO-SHORE CALLS.

If you wish to make a ship-to-shore telephone call, proceed as follows:

1. Select the public correspondence channel assigned to the closest shore station (see Appendix D). Do not call on channel 16 except in an emergency.
2. Listen to determine if the working channel of the desired coast station is busy. A busy condition is evidenced by hearing speech, signaling tones, or a busy signal.
3. If the channel is busy, wait until it clears or switch to an alternate channel if available.
4. If the channel is not busy, press the push-to-talk button and say: (name of the coast station) THIS IS (your call sign once). Release the button. This initial call should be brief and, if spoken distinctly, should last no more than 5 or 6 seconds. Don't be too brief, however. Many Public Coast Stations require this

call to be at least 2 or 3 seconds in duration before the "Call Lamp" lights at the Operator's position.

5. Listen for a reply. If none is heard, repeat call.

6. When the coast station operator answers, say: THIS IS (name of vessel, call sign, and ship's telephone or billing number if assigned), PLACING A CALL TO (city, telephone number desired). Inform operator of type of billing desired (e.g., ship paid call, collect call, credit card call, or third number charge call). If billing information for your vessel has not been registered, the operator will ask for additional identification for billing purposes. At completion of call say: Name of vessel—Call sign—OUT.

III. INSTALLATION—WHERE TO PUT IT

GENERAL.

Installation of your marine radiotelephone consists of selecting a location and mounting the transceiver and antenna. Power and antenna connections are then made, and a safety ground wire run from the chassis terminal on the rear of the unit to the hull (metal boats) or other suitable "ship's ground point." The following paragraphs provide instructions for each of these items. You may perform the installation yourself or have your marine dealer do the work.

ADJUSTMENTS.

The equipment has been aligned at the factory to operate on all of the VHF marine channels and should not require any further adjustments during installation.

CAUTION

All transmitter adjustments must be performed by an FCC licensed technician, holding at least a current second class radio-telephone license.

INSPECTION OF EQUIPMENT.

The exterior of the radiotelephone should be examined for any damage that may have occurred in transit because of improper handling. Report damage promptly to your dealer or the transportation company prior to disposing of the packing materials.

EQUIPMENT SUPPLIED.

- 1—TI 2100 or 2100A Transceiver
- 1—Microphone
- 1—Microphone Hanger Bracket
- 1—Mounting Tray with latch keys
- 1—Channel Usage Card (Waterproof)
- 1—FCC Form 502
- 1—FCC Form 753
- 1—Owners Manual
- 1—Warranty Card.

OPTIONAL UNITS AND ACCESSORIES AVAILABLE.

There are several optional units and accessories available for use with your radiotelephone. Each item may be easily installed by you or your dealer. For further information contact your marine radio dealer or write to Texas Instruments Marine Products, Factory Service Center, P.O. Box 226080, MS 3107, Dallas, Texas 75266. Options available are as follows:

TI 2100A Maritime Land Base Radiotelephone. This optional marine transceiver provides land base station capabilities and meets all FCC requirements for stations operating on land in the maritime service. The unit may be operated with an optional 115 Vac, 50 to 60 Hz power supply or any of the other optional supplies listed below.

TI 2110 Radiotelephone Remote. This remote provides full control and communications capability from a remote location. The cabinet and front panel styling of this companion unit match that of the

radiotelephone and may be used with the TI 2100 or the TI 2100A radiotelephones.

TI 9000A Loran C Receiver. A fully automatic microprocessor-based computer-controlled Loran C unit is also available as a companion unit in matching cabinet and front panel styling to provide you with the latest state-of-the-art navigation capabilities.

TI 9010 Loran C Receiver Remote. This remote provides full navigation capability and control from a remote location. Front panel and cabinet styling match the other Texas Instruments units available. The TI 9010 remote is designed to interface with either the TI 9000A or TI 9000N Loran C receiver.

Power Supplies. Optional power supplies are available to enable your transceiver to operate from 115 Vac, 24 Vdc, or 36 Vdc in lieu of the standard 12-Vdc, negative ground source.

Antennas. There are several standard marine radio-telephone antennas available for both power and sail craft.

Telephone-Type Handset and Cradle. A telephone-type handset similar to your home telephone handset is available to replace the originally installed microphone.

External Speaker. An external speaker (3.2-ohm impedance) may be connected via a miniature plug to the rear of the unit in lieu of the built-in speaker provided.

Public Address (PA) Speaker. An external PA speaker (3.2-ohm impedance) may also be connected to the

rear of the unit using a miniature plug to provide public address/hailer capabilities.

LOCATION OF EQUIPMENT.

The TI 2100 radiotelephone may be mounted in almost any angle or position convenient for use. However, adequate clearance (2 to 3 inches) should be maintained around the unit for proper ventilation. To provide ventilation, as a minimum, the rear of the unit should not be enclosed. If your unit is to be installed in an enclosed console or rack, ventilation holes or louvers must be provided. The microphone hanger and its ground wire may be mounted in any location convenient to the operator. Figure 3-1 shows several suggested methods of mounting. Note also that the front panel may be reversed and tilted for different mounting configurations.

FRONT PANEL REVERSAL.

If the front panel needs to be reversed for a particular mounting configuration (overhead or bulkhead), proceed as follows:

1. Disconnect antenna, power, and auxiliary equipment leads at rear of unit (if connected).
2. Remove the unit from the mounting tray.
3. Remove two shoulder type anchors (one on each side of unit).
4. Carefully slide unit out of the case.
5. Note that the front panel is attached to the chassis with two screws (one on each side). See figure 3-2. Remove the two screws and mount the front panel to the chassis using the correct set of holes. Use holes "A" for normal mount and holes "B"

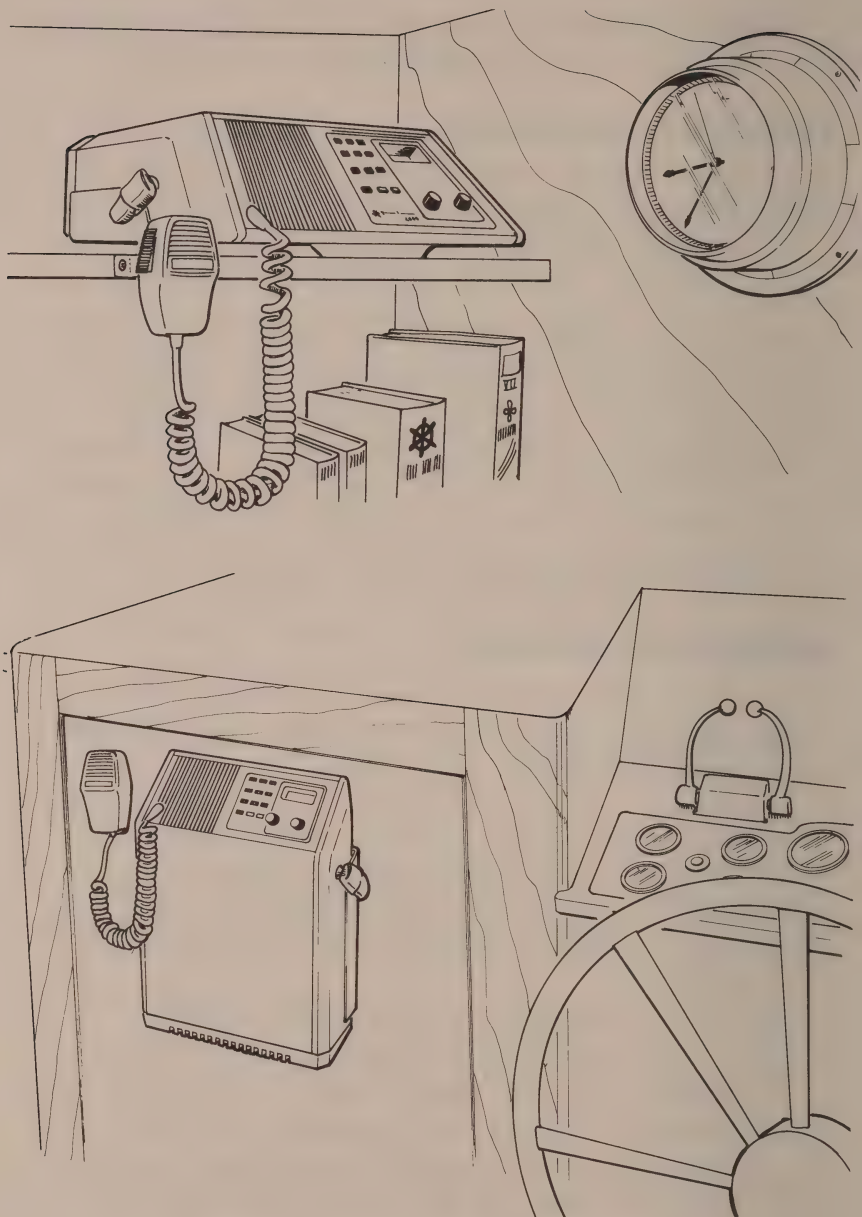


Figure 3-1. Typical Mounting Configurations

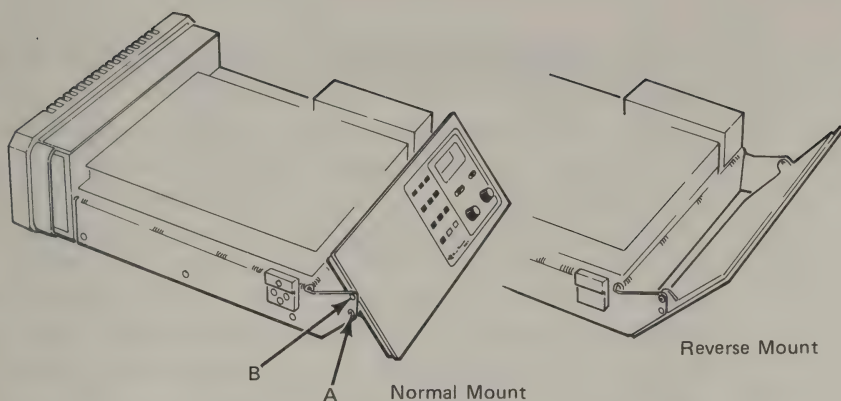


Figure 3-2. Front Panel Reversal

for reverse mount. Tilt front panel to proper angle and tighten in place.

6. Align unit with case and slide assembly into case.

7. Secure unit to case using the two shoulder type anchors removed previously. Be sure these screws are tight as they are used to anchor the unit in the mounting tray.

8. The TI 2100 may be mounted with the mounting tray attached to either the top or the bottom of the radio.

9. Connect antenna, power, auxiliary equipment leads, and ground wire at rear of unit.

MOUNTING.

1. Remove the TI 2100 from the mounting tray.

2. Securely fasten the mounting tray in the desired location with screws or bolts. The performance of the unit is not affected by mounting position. Figure 3-3 provides outline dimensions and clearance recommendations for mounting.

3. Replace unit in mounting tray. The TI 2100 may be locked in position using keys provided.

4. The microphone hanger must be grounded for the unit to automatically return to channel 16 when the microphone is placed in its hanger. If the hanger is not to be attached to a grounded surface, a small wire (AWG 20) may be routed to a nearby ground or to the chassis ground terminal on the rear of the transceiver. Attach the microphone hanger (and ground wire if applicable) to the desired mounting surface using two small screws or bolts.

5. Attach an insulated copper safety ground wire (AWG 16) to the chassis terminal at rear of unit and route it to a suitable ship's ground.

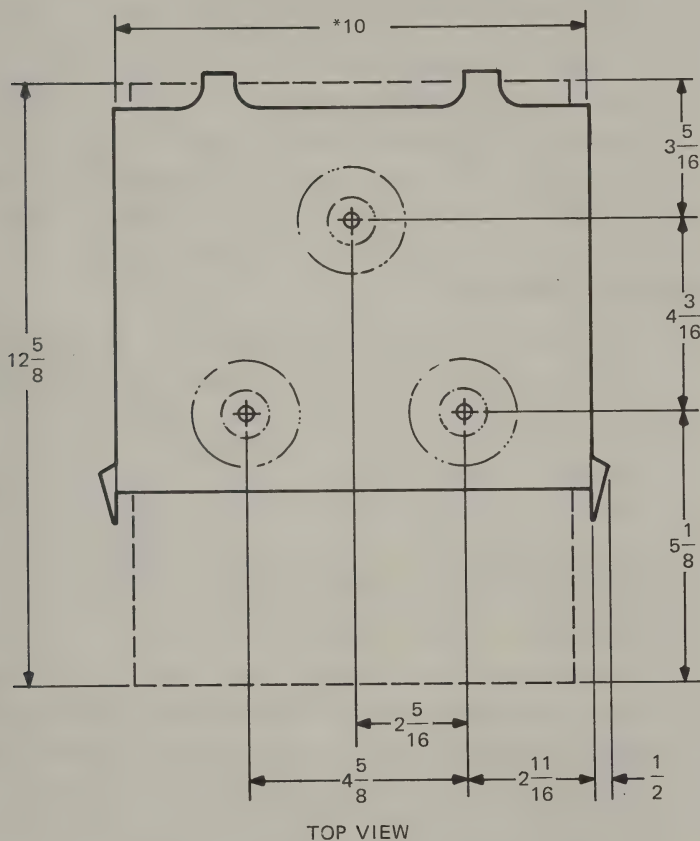
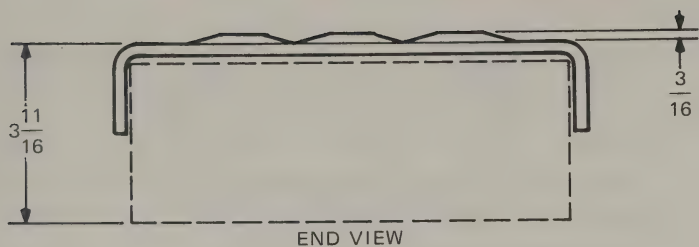
INPUT POWER.

The power leads between the ship's battery source and the radiotelephone should be as short as possible to minimize voltage drop. The following wire sizes are recommended: No. 12 insulated copper wire for cable runs up to 10 feet and No. 10 insulated copper wire for cable runs greater than 10 feet.

The TI 2100 is designed to operate on **negative** ground power systems. For vessels equipped with floating ground or positive ground power systems, consult your dealer. For optimum performance and reliability, the voltage should be between 11.0 and 16.0 Vdc. Optional power supplies are available to enable operation from 24 Vdc, 36 Vdc, and 115 Vac sources.

CAUTION

Exercise care when connecting the power leads **red (+)** and **black (-)**. The red (+) lead is also equipped with an in-line fuse holder. Use 8.0A, 3AG fuse only.



NOTES:

All dimensions are in inches.

*Allow 2 inches each side of mount for opening latch.

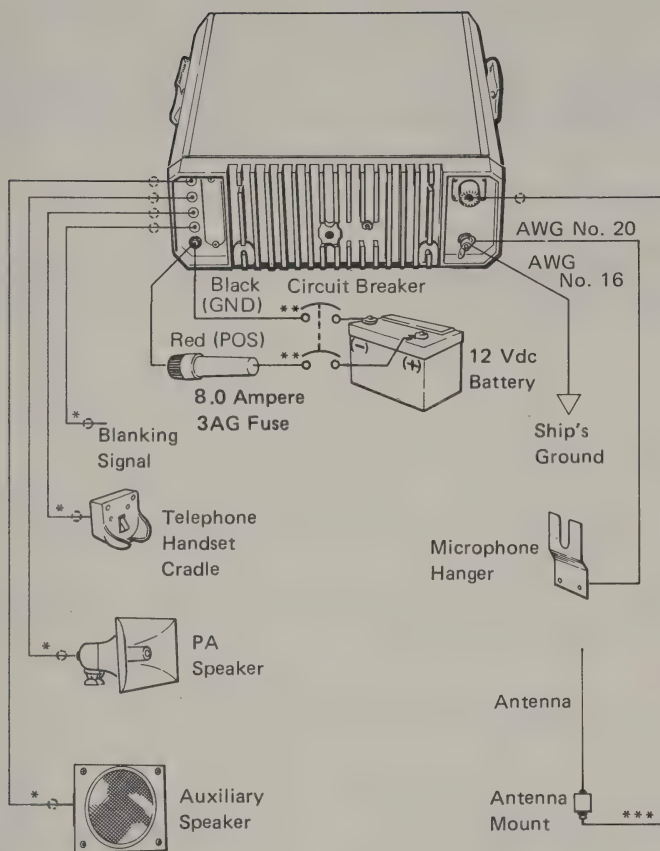
Figure 3-3. Outline Dimensions and Mounting Clearances

The radiotelephone is fused with a 8.0A, 3AG fuse to protect against internal shorts. The electronic circuits of the unit are also protected against damage if the supply voltage polarity is reversed, which generally results in a blown fuse. However, once the transceiver case is grounded, if the black (negative) power lead is connected to the positive (+) battery terminal, then a direct short will be placed across the battery. This will result in the power lead itself being damaged. To prevent the possibility of this occurring, a good practice is to measure the voltage at the power connector before connecting the unit to assure proper polarity. The power leads may also be routed through circuit breakers to provide additional protection. Refer to figure 3-4 for an installation wiring diagram.

ANTENNA SYSTEM.

The radio frequency transmitter power output is fed directly to the antenna through a 50-ohm coaxial transmission line. Type RG-8/U coaxial transmission line is recommended for transmission line lengths of 25 feet or more. RG-58/U coaxial transmission line may be used for shorter line lengths.

Marine Antennas. There are two types of marine antennas recommended for shipboard installation. A low gain 3-dB, 50-ohm coaxial antenna is recommended for sailboats and small power craft, where the vessel is likely to be rolling or pitching. This type of antenna provides a steady signal because of its broader beam lobes. For larger craft representing a more stable platform, a 6-dB, 50-ohm coaxial antenna is recommended. This antenna provides a higher gain which is effectively the same as increasing the power output of the transceiver.



NOTES:

- *Use shielded AWG 20 wire for best results on all auxiliary equipment connections.
- **Use AWG 12 insulated copper wire for cable runs up to 10 feet and AWG 10 for cable runs greater than 10 feet.
- ***Use RG-58/U coaxial cable for up to 25 feet and RG-8/U for cable runs greater than 25 feet.

Figure 3-4. Installation Schematic Wiring Diagram

Specific mounting and installation instructions are provided with the antenna of your choice. See your marine dealer or write to Texas Instruments at the address provided in Section III under options and accessories. Be sure to state antenna choice when writing. The following steps provide general antenna installation instructions applicable to most VHF marine antennas.

WARNING

Avoid contact with antenna during transmissions. RF burns may result if you touch the antenna while transmitting. The antenna should be located at least 5 feet away from the operating position.

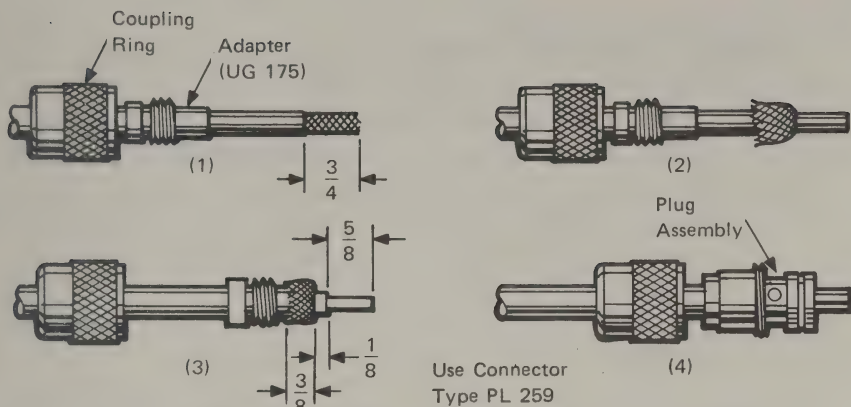
1. Never use an automotive antenna since they will work poorly and deteriorate rapidly in the marine environment.

2. For maximum performance, avoid excessive antenna cable lengths.

3. Route the antenna cable to the TI 2100. If it is necessary to route the antenna cable through hull sides, decks, or bulkheads and still maintain a waterproof seal, use a waterproof bulkhead fitting.

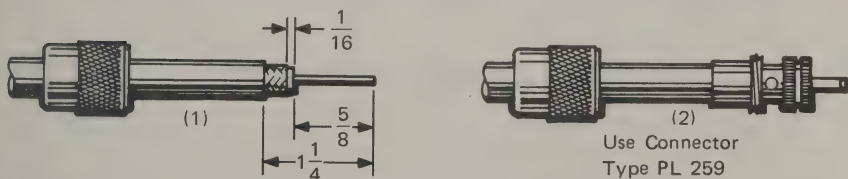
4. Be careful not to kink or pull the coaxial cable around corners or sharp edges. It is better to have a little "extra" cable than not enough.

5. Install the appropriate coaxial antenna connector (see figure 3-5) and connect it securely to the coaxial receptacle at the rear of the TI 2100. When preparing your connector, use a clean soldering iron and apply heat only long enough to make a good solder joint. **Use rosin core solder only.** Other types of solder such as acid core will make a poor electrical connection and will corrode the metal around the joint.



1. Trim the end of the cable even. Remove outer jacket on cable to dimension shown. Place coupling ring and adapter sleeve on cable.
2. Fan out braid and fold back as shown.
3. Remove insulation from the first $\frac{5}{8}$ inch of center conductor as shown. Tin inner conductor with solder. Press braid over the sleeve and trim to dimension shown.
4. Screw plug assembly onto adapter sleeve and solder braid to plug assembly through solder holes in side. Solder center conductor to plug assembly center pin. To finish assembly screw coupling ring over plug assembly.

CONNECTOR INSTALLATION RG-58/U CABLE



1. Cut end of cable even and strip jacket, braid, and dielectric to dimensions shown in table. All cuts are to be sharp and square. Do not nick braid, dielectric or center conductor. Tin exposed center conductor and braid, avoiding excessive heat.
2. Slide coupling ring on cable. Screw the plug subassembly on cable. Solder assembly to braid through solder holes, making a good bond between braid and shell. Solder conductor to contact. Do not use excessive heat. To finish assembly, move coupling ring forward and screw in place on plug subassembly.

CONNECTOR INSTALLATION RG-8/U CABLE

Figure 3-5. Coaxial Connector Installation

NOISE INTERFERENCE.

Do not mount antenna near a source of electrical noise (ship's engine, electrical motors, etc). Complete ignition noise suppression kits are available if needed for use on both inboard and outboard engines. These kits normally consist of shielded ignition wires and special shields for the sparkplugs, ignition coil and distributor. Caution is advised in the use of these kits as engine performance may be adversely affected. Consult your boat dealer before installing.

GENERATOR AND ALTERNATOR INTERFERENCE.

This type of interference is recognized by a high pitched whine that does not immediately stop when the engine is switched off while running at a fast idle. Keep your generator in good condition and make proper electrical connections. It may be required to install 0.5- μ F **coaxial** feedthrough capacitors at the battery and armature leads and to install metal braid shielding on the field and armature leads between the generator and voltage regulator. Ground the braid at both ends. Also ground capacitor bodies.

VOLTAGE REGULATOR INTERFERENCE.

The voltage regulator can produce a ragged, rasping sound that does not immediately stop when the ignition switch is turned off. Install 0.2- μ F **coaxial** feedthrough capacitors in series with the battery and armature leads at the voltage regulator. Ground the capacitor bodies. **The field terminal should have a small capacitor (0.02 μ F) and resistor (4.0 ohm, ½ watt), series-connected, from it to chassis ground.** The resistor prevents the regulator from commanding the generator to charge constantly in the event the bypass capacitor short-circuits. Such a condition would destroy the generator by causing overheating.

IV. MAINTENANCE—KEEPING IT SHIPSHAPE

OWNER MAINTENANCE.

There is very little maintenance required by the owner; however, the following items should be checked periodically.

1. Check transceiver for secure mounting.
2. Check antenna and other auxiliary equipment for secure mounting.
3. Check antenna and power cables for corrosion and secure connections. Also check fuse holder for corrosion.
4. Keep equipment clean.
5. Have your unit checked at your marine radio dealer following the first year of service for proper operating frequency and other minor adjustments, and thereafter at 2-year intervals.

In Case of Difficulty. If you encounter difficulties with the operation of your unit and the above checks do not remedy the problem, you may have the unit serviced by your marine radio dealer. A list of Texas Instruments Marine Communications and Navigation authorized dealers is provided at the end of this section. If a marine radio service dealer is not available, you may return it to: Texas Instruments Marine Products, Factory Service Center, P.O. Box 226080, MS 3107, Dallas, Texas 75266. When returning the unit for service, always be sure to use the correct address. The unit must be packed properly and shipped post or freight **prepaid** and **insured**. Also supply a complete return address with the unit. Refer

to the warranty information at the back of this manual for further details.

If You Have Questions or Need Assistance. If you have questions or need assistance with your radio-telephone, contact your nearest Texas Instruments marine electronics dealer, or write to: Texas Instruments, Marine Communications and Navigation, Customer Service Department, P.O. Box 226080, MS 3107, Dallas, Texas 75266. You may also call our Customer Service Department at (214) 689-4401. We regret that we cannot accept collect calls at this number.

PARTS LIST.

This parts list provides a list of those parts that may be replaced by the owner if he wishes. Other parts that should be replaced by a competent technician at your marine radio dealer or the factory are not listed. The following parts may be obtained through your dealer or by ordering from: Texas Instruments, Marine Communications and Navigation, Customer Service Department, P.O. Box 226080, MS 3107, Dallas, Texas 75266.

Item Description	Part Number
Case, housing	2042724-1
Tray, mounting	2043048-1
Microphone	2042572-1
Bracket, microphone	2043083-1
Handset, telephone	2043084-1
Cradle, handset	2043085-1
Channel Usage Card (waterproof)	2043106-1
Owners Manual	2042983-1

**TEXAS INSTRUMENTS
MARINE COMMUNICATIONS AND NAVIGATION
AUTHORIZED DEALERS**

EASTERN REGION

CONNECTICUT

Essex 06426

Connecticut Marine Instruments
Dauntless Shipyard
(203) 767-8960

Noank 06340

Dockside Electronics
Noank Shipyard
(203) 536-1919

Norwalk 06850

Maritronics Co.
Foot of Commerce Street
(203) 853-1174

Rowayton 06853

Connecticut Marine Electronics
151 Rowayton Avenue
(203) 853-6602

Stamford 06902

Electra Yacht
6 Yacht Haven Marine Center
(203) 323-1163

MAINE

Rockland 04841

Coastal Electronics
92 Tilson Avenue
(207) 594-7777

MARYLAND

Annapolis 21403

Electronic Marine, Inc.
416 Fourth Street
(301) 268-8101

MASSACHUSETTS

Boston 02110

Harbor Electronics
84 Commercial Wharf
(617) 523-4115

Falmouth 02541

Cape Cod Marine Service, Inc.
Falmouth Heights Road
(617) 548-3146

Gloucester 01930

Seatronics Corp.
4 Eastern Avenue
(617) 281-0034

New Bedford 02740

Harbor Electronics
State Pier
(617) 997-1626

SUBJECT TO CHANGE WITHOUT NOTICE

If you do not see a dealer near you, write to:

Texas Instruments
Marine Communications and Navigation
P.O. Box 226080, MS 3107
Dallas, Texas 75266 Telephone: (214) 689-4401

August 1978

EASTERN REGION (Continued)

NEW JERSEY

Absecon 08201

Larry Smith Electronics, Inc.
Jim Leeds and Pitney Roads
(609) 652-7800

Cape May 08204

Larry Smith Electronics, Inc.
#1 Second Avenue
(609) 884-7400

Elizabeth 07201

Electro Nav., Inc.
1201 Corbin Street
(201) 527-0099

Manasquan 08736

Charles W. Rogers & Son, Inc.
Curtis and Union Avenues
(201) 223-1949

Point Pleasant 08742

Larry Smith Electronics, Inc.
204 Broadway
(201) 899-4711

NEW YORK

Bayshore, L.I. 11706

Southshore Marine Radio
29 Degnon Avenue
(516) 665-2695

Freeport 11520

Maritime Communications, Inc.
377 Woodcleft
(516) 623-4421

Greenport 11944

Seatronics, Inc.
19 Front Street
(516) 477-1040

Lindenhurst, L.I. 11757

Seaway Communications, Inc.
770 Shore Walk
(516) 884-7171

Mamaroneck 10543

RAD-COM, Inc.
122 Library Lane
(914) 698-6800

New Rochelle 10801

Griffith Marine
134 North Avenue
(914) 636-4340

NORTH CAROLINA

Clinton 28328

O-Boy-Wil Marine Sales, Inc.
P.O. Box 586
(919) 592-7043

New Bern 28560

Ensley's Radio Co., Inc.
Highway 70-E
(919) 638-6119

Wrightsville Beach 28480

Sea Coast Communications, Inc.
228 Causeway Drive
(919) 256-4848

RHODE ISLAND

Davisville 02903

Harbor Electronics
Building AH-2E
Allen Street

East Greenwich 02818

Merriam Instruments, Inc.
697 Tillinghast Road
(401) 884-1710

Point Judith 02840

Merriam Instruments, Inc.
(401) 783-7335

SOUTH CAROLINA

Charleston 29407

Maricom Electronics, Inc.
1107 St. Andrews Blvd.
(803) 766-3856

EASTERN REGION (Continued)

Georgetown 29440

Parker Electronics
619 Front Street
(803) 546-9351

Norfolk 23523

Sea Port Electronics
307 Campostella Road
(804) 545-4631

VIRGINIA

Chincoteague 23336

Maritime Electronics
604 North Main Street
(804) 336-5335

WESTERN REGION

ALASKA

Dutch Harbor 99685

Northern Marine Electronics
(907) 581-1487

Kodiak 99615

Viking Radar & Communication, Inc.
Box 223
(907) 486-3838

CALIFORNIA

Bodega Bay 94932

Peterson Marine Electronics
Box 582, Bay Flat Road
(707) 875-3371

Crescent City 95531

Crescent City Radio & TV
890 Third Street
(707) 464-4186

Eureka 95509

Carranza Marine Electronics
317 W. 7th Street
(707) 445-2224

Ft. Bragg 95437

Sea & Air Electronics
19350 S. Harbor Drive
(707) 964-4069

Marina Del Rey 90291

Maritime Communications
766 Washington Street
(213) 821-4958

Newport Beach 92663

Bartell Corporation
1577 Monrovia
(714) 645-7040

Oakland 94606

Baytronics Corp.
1995 Embarcadero Avenue
(415) 261-0100

Western Marine Electronics
500 E. 8th Street
(415) 465-6677

Oxnard 93030

Coast Chandlery
3600 Cabezone Way
(805) 985-0541

San Diego 92106

Kettenburg Marine
2810 Carleton Street
(714) 224-8211

San Diego 92113

Marine Electric Co. International
2777 Newton Avenue
(714) 239-2247

WESTERN REGION (Continued)

San Francisco 94104

Collins Marine Corp.
Pier 32
(415) 957-1300

San Francisco 94123

Cal-Marine
1424 Lombard Street
(415) 673-2552

Santa Barbara 93101

Coastal Marine Electronics
232 E. Montecito Street
(805) 963-3915

Sausalito 94965

Maritime Electronics of
Sausalito
200 Harbor Drive
(415) 332-5086

Wilmington 90748

Marine Radio Service
147 North Avalon
(213) 835-6646

OREGON

Astoria 97103

Jensen Communications, Inc.
17 W. Marine Drive
(503) 325-5917

Charleston 97420

George's Marine Electronics
Box 5530
(503) 888-5209

Portland 97211

Rodgers Marine Electronics
3445 N.E. Marine Drive
(503) 287-1101

WASHINGTON

Anacortes 98221

Whatcom Marine Electronics
919 Commercial
(206) 293-6100

Bellingham 98225

Whatcom Marine Electronics
10 Harbor Mall
(206) 676-1990

Blaine 98230

Whatcom Marine Electronics
Blaine Boat Harbor
(206) 332-6323

Port Angeles 98362

Pride Electronics
936 Marine Drive
(206) 452-2922

Seattle 98107

Whatcom Marine Electronics
1127 N.W. 45th Street
(206) 783-4575

Northern Marine Electronics
1126 N.W. 45th Street
(206) 782-3780

Sound Marine Electronics
902 W. Leary Way
(206) 784-7444

Seattle 98134

Sea-Mar Electronics, Inc.
3693 E. Marginal Way S.
(206) 622-6130

MEXICO

Ensenada, B.C.

Marina Electrica, S.A. de C.V.
Calle Aduana 435

WESTERN REGION (Continued)

PANAMA

Panama, R.P.

Marine Electric Co; S.A., R.P.
Calle 50 Y 68
(P.O. Box 6-4291, El Dorado)
26-7410, 26-7970

SOUTHERN REGION

FLORIDA

Destin 32541

Destin Electronics
128 Benning Drive
(904) 837-6391

Ft. Lauderdale 33316

Electronics for Yachting
1525 S.E. 16th Street
(305) 525-3478

Ft. Myers Beach 33931

Marine Electronic Service, Inc.
831 San Carlos Blvd.
(813) 463-6553

Jacksonville 32207

Nautilus Electronics
3507 Old St. Augustine Road
(904) 398-5333

Melbourne 32935

Marelco "99"
4399 N. Harbor City Blvd.
(305) 254-1490

Miami 33142

Rich Electronics, Inc.
3300 N.W. 21st Street
(305) 635-1351

Orlando 32803

RADCOM, Inc.
2440 E. Robinson Street
(305) 894-1801

Pensacola 35201

Two-Way Radio & Electronics,
Inc.
615 S. Palafox Street
(904) 432-7716

Pompano Beach 33062

Jerry's Marine Electronics
2821 E. Atlantic Blvd.
(305) 782-2211

Port Canaveral Station 32020

Beacon Marine Corp.
525 Commercial Drive
(305) 784-2242

Riveria Beach 33404

Larry Smith Electronics, Inc.
1619 Broadway
(305) 844-3592

St. Petersburg 33706

HWH Electronics
4215 Gulf Blvd.
(813) 367-2754

Sarasota 33577

Tradyne, Inc.
6 Marine Plaza
(813) 366-6759

Stuart 33494

Coral Reef Electronics
2519 S.E. Fourth Ct.
(305) 283-3340

SOUTHERN REGION (Continued)

Tampa 33602

Tampa Marine Radio, Inc.
618 North 13th Street
(813) 228-7155

GEORGIA

Savannah 31406

Maricom Electronics, Inc.
P.O. Box 14287
(912) 354-4542

LOUISIANA

Harvey 70058

Bibbins & Rice
2480 Breaux Avenue
(504) 362-4820

Houma 70360

Bibbins & Rice
301 Howard Avenue
(504) 876-6870

Lafayette 70501

Bibbins & Rice
138 Banks Avenue
(318) 232-7039

Lake Charles 70601

Bibbins & Rice
2014 Enterprise Blvd.
(318) 433-1079

Morgan City 70380

Bibbins & Rice
1008 Clothilde Street
(504) 384-2456

Electronic Services, Inc.
6008 Highway 90 East
(504) 384-5500

Gulf Radiotelephone
1430 Sandra
(504) 384-8433

New Iberia 70560

Bibbins & Rice
434 Charles Street
(318) 365-1310

Port Sulphur 70083

Bibbins & Rice
P.O. Box 352
(504) 564-3936

Westwego 70094

Electronic Services, Inc.
177 Sala Avenue
(504) 347-1561

MISSISSIPPI

Biloxi 39530

Southeastern Electronics
1223 East Howard Avenue
(601) 436-6943

Biloxi 39533

Patterson Communications
& Electronics
P.O. Box 1183
(601) 374-3744

Greenville 38701

Electronic Services, Inc.
511 Highway 1 South
(601) 332-0936

Ocean Springs 39564

Marine Electronics Corp., Inc.
Highway 90E
(601) 875-9353

Pascagoula 39567

Southeastern Electronics
P.O. Box 597
(601) 762-1069

TEXAS

Aransas Pass 78336

Gulf Radiotelephone
200 Huff Street
(512) 758-2021

Brownsville 78521

Dubose Marine
Star Route 26
(512) 831-4249

SOUTHERN REGION (Continued)

Dickinson (Galveston) 77539

Gulf Radiotelephone
3732 Evergreen
(713) 744-0150

Houston 77087

Bibbins & Rice
5730 Corl Street
(713) 641-5023

Lake Jackson (Freeport) 77566

Gulf Radiotelephone
130 S. Youpon
(713) 233-8911

Pasadena (Houston) 77054

Gulf Radiotelephone
& Electronics
3333 Watters Road
(713) 944-6000

Sabine (Port Arthur) 77655

Gulf Radiotelephone
Route 1
(713) 962-8465

INLAND REGION

ILLINOIS

Chicago 60617

Lorain Electronics
(312) 221-6099

Hartford 62048

Specialized Electronics
(618) 254-0609

Mt. Clemens 48043

Seaview Electronics, Inc.
35427 Harper Avenue
(313) 792-3510

Sault Ste. Marie 49784

Lorain Electronics
(906) 632-2818

KENTUCKY

Paducah 42001

Specialized Electronics
(502) 554-3602

MINNESOTA

Duluth 55804

Lorain Electronics
(218) 525-3859

LOUISIANA

Gonzales 70737

Specialized Electronics
(504) 644-5577

MISSISSIPPI

Greenville 38701

Specialized Electronics
(601) 332-6354

MICHIGAN

Holland 49423

Tele-Rad, Inc.
755 Windcrest Drive
(616) 396-3541

OHIO

Ashtabula 44004

Lorain Electronics
(216) 997-5228

INLAND REGION (Continued)

Grand River 44045

Holbrook Industries
600 River Street
(216) 352-2411

Lorain 44052

Lorain Electronics
2307 Leavitt Road
(216) 282-6116

Toledo 43447

Lorain Electronics
(419) 836-7570

PENNSYLVANIA

Large 15025

Specialized Electronics
(412) 384-6201
Ans. Service (412) 664-4253

TENNESSEE

Memphis 38116

Specialized Electronics
3106 Norbrook Drive
(901) 332-6354

WEST VIRGINIA

Huntington 25706

Specialized Electronics
(304) 523-0521

WISCONSIN

Milwaukee 53074

Metro Communications
(414) 284-6061

Sturgeon Bay 54235

Bay Electronics
23 E. Oak Street
(414) 743-9693

INTERNATIONAL

Triton International Corp.
360 Chung Hsiao East Road, Sect. 4
Taipei, Taiwan

APPENDIX A—CHANNEL USAGE CHART

Chan	Ship to Ship	Ship to Coast	Usage
*01		●	Public Tele/Port Oper
*02		●	Public Tele/Port Oper
*03		●	Public Tele/Port Oper
*04		●	Public Tele/Port Oper
*05		●	Public Tele/Port Oper
06	●		Intership Safety
07		●	Public Tele/Port Oper
07A	●	●	Commercial
08	●		Commercial/Intership
09	●	●	Commercial and Noncommercial
10	●	●	Commercial
11	●	●	Commercial
12	●	●	Port Oper
13	●	●	Navigational/Bridge to Bridge (1.0 W max)
14	●	●	Port Oper
15	●	●	Port Oper 1.0 W max
*15A			Environmental (Rec Only)
16	●	●	Distress, Safety, and Calling
17	●	●	State Control 1.0 W max
18		●	Port Oper
18A	●	●	Commercial
19		●	Port Oper
19A	●	●	Commercial
20	●	●	Port Oper
21		●	Port Oper
*21A			U.S. Government Only
22		●	Port Oper

Chan	Ship to Ship	Ship to Coast	Usage
22A 23 *23A	●	● ●	U.S. Coast Guard Liaison Public Tele U.S. Government Only
24 25 26		● ● ●	Public Tele Public Tele Public Tele
27 28 29		● ●	Public Tele Public Tele Not Assigned (Rec Only)
*60 *61 *62		● ● ●	Public Tele/Port Oper Public Tele/Port Oper Public Tele/Port Oper
*63 *64 65		● ● ●	Public Tele/Port Oper Public Tele/Port Oper Public Tele/Port Oper
65A 66 66A	● ●	● ● ●	Port Oper Public Tele/Port Oper Port Oper
67 68 69	● ● ●	● ● ●	Commercial Noncommercial Noncommercial
70 71 72	● ● ●	●	Noncommercial Noncommercial Noncommercial

NOTES:

Unless otherwise indicated, channel usages for US and INT are same.

— Channels marked with an asterisk () are limited to receive only in U.S. International usage is as indicated.

●— Used to indicate yes.

A— Some channels have different usage between U.S. and International waters. These channels are listed twice with the U.S. version identified by an "A."

Chan	Ship to Ship	Ship to Coast	Usage
73	●	●	Port Oper
74	●	●	Port Oper
75			Not Assigned (Rec Only)
76			Not Assigned (Rec Only)
77	●		Commercial
78		●	Port Oper
78A	●	●	Noncommercial
79		●	Port Oper
79A	●	●	Commercial
80		●	Port Oper
80A	●	●	Commercial
81		●	Port Oper
*81A			U.S. Government Only
82		●	Public Tele/Port Oper
*82A			U.S. Government Only
83		●	Public Tele
*83A			U.S. Government Only
84		●	Public Tele
85		●	Public Tele
86		●	Public Tele
87		●	Public Tele
88		●	Public Tele
88A	●		Commercial
89			Not Assigned (Rec Only)

Chan	Ship to Ship	Ship to Coast	Usage
SEL 1	162.55 MHz		Weather (Rec Only)
SEL 2	162.40 MHz		Weather (Rec Only)
SEL 3	162.475 MHz		Weather (Rec Only)
SEL 4	156.750 MHz		Environmental (Rec Only) (same as 15A)

NOTES:

Unless otherwise indicated, channel usages for US and INT are same.

—Channels marked with an asterisk () are limited to receive only in U.S. International usage is as indicated.

●—Used to indicate yes.

A—Some channels have different usage between U.S. and International waters. These channels are listed twice with the U.S. version identified by an "A."

APPENDIX B—VHF-FM PUBLIC COAST STATIONS

ATLANTIC COAST

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
MAINE				
KQU 620	Camden, Me.	26 & 27	Coastal Communications, Inc.	(Call sign only)
KTD 590	Cape Elizabeth, Me.	28	Portland Marine Radio	(Call sign only)
KVF 856	Southwest Harbor, Me.	28	Coastal Communications, Inc.	(Call sign only)
NEW HAMPSHIRE				
KQU 555	New Castle, N.H.	28	Comex, Inc.	Portsmouth Marine Opr.
MASSACHUSETTS				
KJC 737	New Bedford, Mass.	24 & 26	Great Eastern Communications Co.	New Bedford Marine Opr.
KQU 634	Hyannis, Mass.	28	Niagara Communications, Inc.	Hyannis Marine Opr.
KCD 817	Quincy, Mass.	26	New England Telephone Co.	Boston Marine Opr.
RHODE ISLAND				
KTR 948	Providence, R.I.	28	Niagara Communications, Inc.	Providence Marine Opr.
CONNECTICUT				
KWB 437	Groton, Conn.	25 & 26	Great Eastern Communications Co.	New London Marine Opr.
KLU 787	Monroe, Conn.	24	Liberty Communications	Bridgeport Marine Opr. Channel 24
KLU 785	Stratford, Conn.	27	Great Eastern Communications Co.	Bridgeport Marine Opr. Channel 27

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
NEW YORK				
KZN 548	Bay Shore, N.Y.	85	New York Telephone Co.	Bay Shore Marine Opr.
KEA 693	New York, N.Y.	84, 25, 26	New York Telephone Co.	New York Marine Opr.
KLU 786	Riverhead, N.Y.	28	New York Telephone Co.	Riverhead Marine Opr.
NEW JERSEY				
KQU 556	Navesink, N.J.	24	New Jersey Bell Telephone Co.	Sandy Hook Marine Opr.
KGW 292	Berkeley Township, N.J.	27	New Jersey Bell Telephone Co.	Tom's River Marine Opr.
KGW 378	Sea Isle City, N.J.	26	New Jersey Bell Telephone Co.	Atlantic City Marine Opr.
DELAWARE				
KVF 855	Delaware Bay	27	The Diamond State Telephone Co.	Lewes Marine Opr.
KVR 460	Delaware River	28	The Diamond State Telephone Co.	Wilmington Marine Opr.
MARYLAND				
KGD 518	Chesapeake Bay	25 & 26	Chesapeake & Potomac Tel. Co.	Baltimore Marine Opr.
KRS 907	Chesapeake Bay	28	Chesapeake & Potomac Tel. Co.	Cambridge Marine Opr.
KSK 223	Ocean City, Md.	26	Chesapeake & Potomac Tel. Co.	Ocean City, Md., Marine Opr.
KSK 209	Chesapeake Bay	27	Radio Communications, Inc.	Prince Fredrick Marine Opr.
KAQ 383	Chesapeake Bay	26	Chesapeake & Potomac Tel. Co.	Point Lookout Marine Opr.
VIRGINIA				
KIC 631	Norfolk/Hampton, Va.	26 & 27	Chesapeake & Potomac Tel. Co.	Norfolk Marine Opr.

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
NORTH CAROLINA				
KXE 293	Albemarle Sound	24	Marine Telephone Company	Elizabeth City Marine Opr.
KRS 910	Morehead City/ Beaufort, N.C.	28	Marine Telephone Company	Morehead City Marine Opr.
KFT 301	Wilmington, N.C.	26	Marine Telephone Company	(Call sign only)
GREAT LAKES				
MINNESOTA				
KVY 601	Duluth, Minn.	28	Lorain Electronics Corp.	Duluth Marine Opr.
WISCONSIN				
KVY 604	Sturgeon Bay, Wisc.	28	Lorain Electronics Corp.	Sturgeon Bay Marine Opr.
KVY 605	Port Washington, Wisc.	26 & 28	Lorain Electronics Corp.	Port Washington Marine Opr.
ILLINOIS				
KTD 564	Waukegan, Ill.	84	Illinois Bell Telephone Co.	Waukegan Marine Opr.
WAY 200	Chicago, Ill.	27 & 26	Illinois Bell Telephone Co.	Chicago Marine Opr.
INDIANA				
KQU 578	Portage, Ind.	28	Burns Harbor Radio	(Call sign only)
KLU 757	Michigan City, Ind.	28	Burns Harbor Radio	(Call sign only)

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
MICHIGAN				
KVY 602	Copper Harbor, Mich.	26 & 85	Lorain Electronics Corp.	Copper Harbor Marine Opr.
KVY 603	Grand Marais, Mich.	28	Lorain Electronics Corp.	Grand Marais Marine Opr.
KSK 283	St. Joseph, Mich.	24	Harbor Communications, Inc.	(Call sign only)
KQU 438	Saugatuck, Mich.	25	Saugatuck Radio	(Call sign only)
KQU 546	Muskegon Hts., Mich.	26	Waldo I. Wilson	(Call sign only)
WLC	Charlevoix, Mich.	26	Central Radio Telegraph Co.	Charlevoix Marine Opr.
QOB 667	Sault Ste. Marie, Mich.	26	Michigan Bell Telephone Co.	Sault Ste. Marie Marine Opr.
WLC	Rogers City, Mich.	26 & 28	Central Radio Telegraph Co.	Rogers City Marine Opr.
WLC	Tawas City, Mich.	26	Central Radio Telegraph Co.	Tawas City Marine Opr.
KUF 718	Bay City, Mich.	28	King Communications, Inc.	(Call sign only)
QOB 666	Detroit, Mich.	26 & 28	Michigan Bell Telephone Co.	Detroit Marine Opr.
KAD 806	Bolles Harbor, Mich.	25	Toledo Marine Telephone Co.	Toledo Marine Opr.
KAD 836	Marysville, Mich.	25	Michigan Bell Telephone Co.	Port Huron Marine Opr.
OHIO				
WMI	Lorain, Ohio	26 & 28	Lorain Electronics Corp.	Lorain Marine Opr.
KQU 440	Cleveland, Ohio	28	Lorain Electronics Corp.	(Call sign only)
PENNSYLVANIA				
KLU 745	Erie, Pa.	25	Professional Communications, Inc.	(Call sign only)
NEW YORK				
WBL	Martinsville, N.Y.	26	Great Lakes Marine Radio, Inc.	Buffalo Marine Radio Opr.
KLU 788	Rochester, N.Y.	25	Tel-Page Corporation	Rochester Channel 25

GULF OF MEXICO

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
TEXAS				
KLK 376	Brownsville, Tex.	26	Mobilphone Service, Inc.	(Call sign only)
KWB 424	Corpus Christi, Tex.	26	Mobilphone Service, Inc.	(Call sign only)
KGW 295	Port Lavaca, Tex.	26	Texas Marine Radiotelephone Co.	(Call sign only)
KGW 304	Freeport/Bay City, Tex.	25 & 27	Mobilphone Service, Inc.	(Call sign only)
KKD 742	La Marque, Tex.	24 & 28	Southwestern Bell Telephone Co.	Galveston Marine Opr.
KKD 739	La Porte, Tex.	26	Southwestern Bell Telephone Co.	Houston Marine Opr.
KKD 741	Port Arthur, Tex.	26 & 27	Southwestern Bell Telephone Co.	(Call sign only)
LOUISIANA				
KQU 437	Cameron, La.	24	Cameron Telephone Co.	(Call sign only)
KKM 649	Erath, La.	25, 86, 87	South Central Bell Telephone Co.	Erath Marine Opr.
KGN	Delcambre, La.	28 & 85	Delcambre Telephone Company	Delcambre Marine Opr.
KKD 732	Morgan City, La.	24 & 26	South Central Bell Telephone Co.	Morgan City Marine Opr.
KSK 317	Cocodrie, La.	27	Microcom, Inc.	(Call sign only)
KKQ 382	Leeville, La.	25	Lafourche Telephone Company	(Call sign only)
KSK 316	Leeville, La.	85	Lafourche Telephone Company	(Call sign only)
KJC 784	Venice, La.	27, 28, 86	South Central Bell Telephone Co.	Venice Marine Opr.
KSK 305	Hopedale, La.	85	South Central Bell Telephone Co.	Hopedale Marine Opr.
KUZ 557	Slidell, La.	84	South Central Bell Telephone Co.	Slidell Marine Opr.
MISSISSIPPI				
KKM 650	Gulfport, Miss.	28	South Central Bell Telephone Co.	Gulfport Marine Opr.
KLU 775	Pascagoula, Miss.	27	Answer Iowa, Inc.	Pascagoula Marine Opr.

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
ALABAMA				
WLO	Mobile, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)
WLO	Coden, Ala.	25 & 26	Mobile Marine Radio, Inc.	(Call sign only)
FLORIDA				
KII 294	Pensacola, Fla.	26	Southern Bell Telephone & Tel. Co.	Pensacola Marine Opr.
KWB 455	Ft. Walton Beach, Fla.	28	Mobilfone	(Call sign only)
KII 295	Panama City, Fla.	26	Southern Bell Telephone & Tel. Co.	Panama City Marine Opr.
KSK 339	Apalachicola, Fla.	28	St. Joseph Telephone & Tel. Co.	(Call sign only)
KUZ 556	Cedar Key, Fla.	26	Gulf Coast Communications, Inc.	Cedar Key Marine Opr.
KWB 447	Crystal River, Fla.	28	Florida Telephone Co.	(Call sign only)
KUZ 385	Clearwater, Fla.	24	General Telephone Co. of Florida	(Call sign only)
KWB 426	Tampa, Fla.	26	Tampa Radio Marine Service	(Call sign only)
KTA 420	St. Petersburg, Fla.	27	Tampa Radio Marine Service	St. Petersburg Marine Opr.
KUZ 383	Palmetto, Fla.	25	Gulf Coast Communications, Inc.	(Call sign only)
KTD 563	Venice, Fla.	28	Airsignal International, Inc.	(Call sign only)
KYH 550	Ft. Myer, Fla.	26	Gulf Coast Communications, Inc.	Ft. Myer Marine Opr.
KQU 410	Naples, Fla.	25	Marine Telephone Co.	Naples Marine Opr.
KSK 210	Marathon, Fla.	25	Marine Telephone Co. of Marathon, Inc.	(Call sign only)
KQU 411	Key West, Fla.	26	Marine Telephone Co.	(Call sign only)

PACIFIC COAST

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
ALASKA				
WSX 77	Boswell Bay, Alaska	26	RCA Alaska Communications, Inc.	(Call sign only)
WSX 74	Cold Bay, Alaska	26	RCA Alaska Communications, Inc.	(Call sign only)
WAB 903	Homer, Alaska	26	RCA Alaska Communications, Inc.	(Call sign only)
WRN 40	Juneau, Alaska	28	RCA Alaska Communications, Inc.	(Call sign only)
WRN 41	Ketchikan, Alaska	28	RCA Alaska Communications, Inc.	(Call sign only)
WSX 78	Kodiak, Alaska	26	RCA Alaska Communications, Inc.	(Call sign only)
WSX 87	Nikishka, Alaska	28	RCA Alaska Communications, Inc.	(Call sign only)
WSX 73	Nome, Alaska	26	RCA Alaska Communications, Inc.	(Call sign only)
WRN 42	Petersburg, Alaska	28	RCA Alaska Communications, Inc.	(Call sign only)
WAB 900	Seward, Alaska	28	RCA Alaska Communications, Inc.	(Call sign only)
WRN 43	Sitka, Alaska	28	RCA Alaska Communications, Inc.	(Call sign only)
WAB 902	Unalaska, Alaska	28	RCA Alaska Communications, Inc.	(Call sign only)
WAB 901	Valdez, Alaska	28	RCA Alaska Communications, Inc.	(Call sign only)

WASHINGTON

KOH 840	Bellingham, Wash.	28	Pacific Northwest Bell Telephone Co.	Bellingham Marine Opr.
KOH 841	Port Angeles, Wash.	25	Pacific Northwest Bell Telephone Co.	Port Angeles Marine Opr.
KOH 630	Seattle, Wash.	25 & 26	Pacific Northwest Bell Telephone Co.	Seattle Marine Opr.
KQU 597	Cosmopolis, Wash.	28	RAD COM Electronics, Inc.	(Call sign only)
KOH 627	Tacoma, Wash.	28	Pacific Northwest Bell Telephone Co.	Tacoma Marine Opr.

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
OREGON				
KOF 209	Astoria, Ore.	26	Pacific Northwest Bell Telephone Co.	Astoria Marine Opr.
KBA 333	Rainier, Ore.	28	Pacific Northwest Bell Telephone Co.	Rainier Marine Opr.
KOE 815	Portland, Ore.	26	Pacific Northwest Bell Telephone Co.	Portland Marine Opr.
KTJ	Coos Bay, Ore.	25	General Telephone Co. of Northwest, Inc.	Coos Bay Marine Opr.
KZV 784	Newport, Ore.	28	Pacific Northwest Bell Telephone Co.	Newport Marine Opr.
KRS 905	Brookings, Ore.	27	Curry County Communications	(Call sign only)
CALIFORNIA				
KTR 967	Klamath City, Cal.	28	CAL/AUTO/FONE	(Call sign only)
KQU 594	Kneeland, Cal.	26	Pacific Telephone & Telegraph Co.	Eureka Marine Opr.
KQU 591	Caspar, Cal.	28	Pacific Telephone & Telegraph Co.	Ft. Bragg Marine Opr.
KXC 711	Pt. Reyes, Cal.	25	Pacific Telephone & Telegraph Co.	Bodega Bay Marine Opr.
KMH 828	Oakland, Cal.	26 & 84	Pacific Telephone & Telegraph Co.	San Francisco Marine Opr.
KUZ 408	Skyland Road, Cal.	27	General Telephone Co. of California	Santa Cruz Marine Opr.
KTR 860	Salinas, Cal.	28	Salinas Valley Radio Telephone Co.	Monterey Bay Marine Opr.
KLU 727	San Luis Obispo, Cal.	26	R.C.S., Inc.	(Call sign only)
KUF 739	Santa Barbara, Cal.	25	General Telephone Co. of California	Santa Barbara Marine Opr.
KUF 847	San Pedro Hill, Cal.	27 & 85	Radiocall Corporation	Redondo Marine Opr.
KMB 393	Avalon, Cal.	24 & 26	Pacific Telephone & Telegraph Co.	San Pedro Marine Opr.
KMB 394	San Diego, Cal.	28 & 86	Pacific Telephone & Telegraph Co.	San Diego Marine Opr.
KUF 726	Santiago Peak, Cal.	84	Dana Point Marine Telephone Co.	Dana Point Marine Opr.
HAWAII				
KGW 423	Honolulu, Hawaii	27	Radiocall Inc.	(Call sign only)
KLU 758	Wailuku, Hawaii	26	Radiocall Inc.	(Call sign only)

INLAND WATERWAYS

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
LAKE SHASTA				
KUF 732	Redding, Cal.	28	Radio Electronic Products Corp.	Redding Marine Opr.
LAKE TAHOE				
KQU 378	Crystal Bay, Nev.	26 & 28	Stockton Mobilphone, Inc.	Lake Tahoe Marine Opr.
SACRAMENTO RIVER				
KGW 464	Vacaville, Cal.	27 & 28	Pacific Telephone & Telegraph Co.	Stockton Marine Opr.
MEADOW LAKES				
KUF 607	Meadow Lakes, Cal.	24	Fresno Mobile Radio, Inc.	(Call sign only)
KINGS RIVER				
KTD 573	Fresno, Cal.	26	Fresno Mobile Radio, Inc.	(Call sign only)
LAKES OF MING				
KUF 563	Bakersfield, Cal.	28	Kidd's Communications, Inc.	(Call sign only)
LAKE MEAD				
KLU 743	Overton, Nev.	26	The Telephone Co., Inc.	Lake Mead Marine Opr.

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
MISSOURI RIVER				
KZV 793	Sioux City, Iowa	28	Answer Iowa, Inc.	(Call sign only)
KTD 514	Omaha, Neb.	26	Mobile Communications, Inc.	(Call sign only)
KFT 310	Kansas City, Mo.	24 & 26	Mobile Communications, Inc.	Kansas City Marine Opr.
LAKE O' THE CHEROKEES				
KTR 853	Ketchum, Okla.	27	Carlos V. Langston	(Call sign only)
ARKANSAS RIVER				
KQU 545	Oilton, Okla.	28	Mobilfone Service, Inc.	(Call sign only)
KFL 352	Tulsa, Okla.	26	Mobilfone Service, Inc.	(Call sign only)
KQU 583	S. Forth Smith, Ark.	28	Mobilfone Service, Inc.	(Call sign only)
KFL 353	Blue Mountain, Ark.	26	Mobilfone Service, Inc.	(Call sign only)
KFT 281	Little Rock, Ark.	26	Mobilfone Communications	(Call sign only)
LAKE DALLAS/LAKE GRAPEVINE/LEWISVILLE DAM/LAKE RAY HUBBARD				
KFN 244	Dallas, Tex.	28	Maritime Telecommunications	(Call sign only)
LAKE TEXOMA				
KZJ 331	Lake Texoma, Tex.	26	Maritime Telecommunications	(Call sign only)
LAKE WACO				
KUZ 380	Waco, Tex.	26	Waco Communications, Inc.	(Call sign only)

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
MISSISSIPPI RIVER				
KFQ 902	St. Paul, Minn.	26	Marine Radio, Inc.	Minneapolis-St. Paul Marine Opr.
KFQ 902	Hastings, Minn.	28	Marine Radio, Inc.	Minneapolis-St. Paul Marine Opr.
KWB 425	LaCrosse, Wis.	26	Marine Radio, Inc.	LaCrosse Marine Opr.
KFT 292	Asbury, Iowa	26	Marine Radio, Inc.	Dubuque Marine Opr.
KYQ 828	Clinton, Iowa	28	Answer Iowa, Inc.	(Call sign only)
KFT 290	Davenport, Iowa	26	Answer Iowa, Inc.	(Call sign only)
KGW 405	Fowler, Ill.	26	Illinois Bell Telephone Co.	Quincy Marine Opr.
KLU 732	Grafton, Ill.	27 & 28	Charles P. Soroka	St. Louis Marine Opr.
WGK	Granite City, Ill.	24, 26, 27	Charles P. Soroka	St. Louis Marine Opr.
WGK	Dupo, Ill.	26 & 27	Charles P. Soroka	St. Louis Marine Opr.
KGW 380	Crystal City, Mo.	28	Southwestern Bell Telephone Co.	(Call sign only)
KGW 379	Perryville, Mo.	26	Southwestern Bell Telephone Co.	Perryville Marine Opr.
KRS 908	Cape Girardeau, Mo.	24	Withers Communications	(Call sign only)
KGW 320	Cairo, Ill.	27 & 28	Illinois Bell Telephone Co.	Cairo Marine Opr.
KGW 348	Blytheville, Ark.	28	Southwestern Bell Telephone Co.	Blytheville Marine Opr.
WJG	Memphis, Tenn.	24 & 26	WJG Telephone Co., Inc.	Memphis Marine Opr.
KSK 385	Helena, Ark.	27 & 28	WJG Telephone Co., Inc.	Helena Radio Marine Opr.
KTD 467	Hillhouse, Miss.	24 & 86	WJG Telephone Co., Inc.	(Call sign only)
KFT 286	Greenville, Miss.	26	COM/NAV Marine, Inc.	(Call sign only)
KXS 239	Lake Providence, La.	25	Radio Telephone of Louisiana	(Call sign only)
KFT 302	Vicksburg, Miss.	28	COM/NAV Marine, Inc.	(Call sign only)
KFT 287	Natchez, Miss.	26	CON/NAV Marine, Inc.	Natchez Marine Opr.
KXE 270	Lebeau, La.	85	South Central Bell Telephone Co.	Melville Marine Opr.
KKM 648	Baton Rouge, La.	27 & 86	South Central Bell Telephone Co.	Baton Rouge Marine Opr.
KZA 917	Convent, La.	25	South Central Bell Telephone Co.	Convent Marine Opr.

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
KKD 736 KJC 784	New Orleans, La. Venice, La.	24, 26, 27, 87 27, 28, 86	South Central Bell Telephone Co. South Central Bell Telephone Co.	New Orleans Marine Opr. Venice Marine Opr.
LOUISIANA INTRACOASTAL WATERWAYS				
KKD 735 KKM 649 KGN	Lake Charles, La. Erath, La. Delcambre, La.	28 & 84 25, 86, 87 28 & 85	South Central Bell Telephone Co. South Central Bell Telephone Co. Delcambre Telephone Company	Lake Charles Marine Opr. Erath Marine Opr. Delcambre Marine Opr.
KKD 732 KEW 821 KQU 584 KKD 736	Morgan City, La. Houma, La. Larose, La. New Orleans, La.	24 & 26 28 & 86 84 24, 26, 27, 87	South Central Bell Telephone Co. South Central Bell Telephone Co. Lafourche Telephone Co., Inc. South Central Bell Telephone Co.	Morgan City Marine Opr. Houma Marine Opr. (Call sign only) New Orleans Marine Opr.
KTR 929	Ponchatoula, La.	85	South Central Bell Telephone Co.	Ponchatoula Marine Opr.
LAKES PONCHARTRAIN/MAUREPAS				
KUF 725	Jennings, La.	27	Jennings Mobilfone	(Call sign only)
MERMENTAU RIVER				
ILLINOIS RIVER				
WAY 200 KQU 582 KGW 318 KFT 288 KGW 322	Chicago, Ill. Joliet, Ill. Ottawa, Ill. Peoria, Ill. Beardstown, Ill.	27 28 26 28 26	Illinois Bell Telephone Co. Illinois Bell Telephone Co. Illinois Bell Telephone Co. Houser Communications, Inc. Illinois Bell Telephone Co.	Chicago Marine Opr. Joliet Marine Opr. Ottawa Marine Opr. (Call sign only) Beardstown Marine Opr.

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
TENNESSEE RIVER				
KFT 289	Paducah, Ky.	26	COM/NAV Marine, Inc.	Paducah Marine Opr.
KYQ 861	Tuscumbia, Ala.	26	The Pyle Company	Tuscumbia Marine Opr.
KQU 377	Knoxville, Tenn.	26	Southeast Mobilphone, Inc.	(Call sign only)
BLACK WARRIOR RIVER				
WLO	Demopolis, Ala.	26	Mobile Marine Radio	(Call sign only)
WLO	Tuscaloosa, Ala.	27	Mobile Marine Radio	(Call sign only)
TOMBIGBEE RIVER				
KYH 486	Columbus, Miss.	24	Radiotelephone of Mississippi	(Call sign only)
WLO	Demopolis, Ala.	26	Mobile Marine Radio, Inc.	(Call sign only)
WLO	Myrtlewood, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)
WLO	Grove Hill, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)
WLO	Calvert, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)
ALABAMA RIVER				
WLO	Grove Hill, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)
WLO	Calvert, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)
MOBILE RIVER				
WLO	Calvert, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)
WLO	Mobile, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)
MOBILE BAY				
WLO	Mobile, Ala.	26 & 28	Mobile Marine Radio, Inc.	(Call sign only)

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
OHIO RIVER				
KGW 320	Cairo, Ill.	27 & 28	Illinois Bell Telephone Co.	Cairo Marine Opr.
KFT 289	Paducah, Ky.	26	COM/NAV Marine, Inc.	Paducah Marine Opr.
KGW 329	Evansville, Ind.	26	Indiana Bell Telephone Co.	Evansville Marine Opr.
KGW 321	Tell City, Ind.	28	Indiana Bell Telephone Co.	Tell City Marine Opr.
KUZ 558	Brandenburg, Ky.	27	Ship to Shore Telephone Co.	(Call sign only)
WFN	Jeffersonville, Ind.	24 & 26	AMCOM, Inc.	(Call sign only)
WFN	Madison, Ind.	26	AMCOM, Inc.	(Call sign only)
KJC 732	Cincinnati, Ohio	28	Cincinnati & Suburban Bell Telephone Co.	Cincinnati Marine Opr.
KYU 675	Maysville, Ky.	26	Ship to Shore Telephone Co.	(Call sign only)
KGW 317	Ironton, Ohio	28	Ohio Bell Telephone Company	Ironton Marine Opr.
KEW 837	Pt. Pleasant, W. Va.	26	COM/NAV Marine, Inc.	Pt. Pleasant Marine Opr.
KUZ 571	Marietta, Ohio	28	Ship to Shore Telephone Co.	(Call sign only)
KJC 806	Moundsville, W. Va.	26	Mobile Telephone Service of Wheeling, W. Va.	(Call sign only)
KGW 301	Mingo Junction, Ohio	28	Ohio Bell Telephone Company	Steubenville Marine Opr.
KLU 836	Freedom, Pa.	26	WCM Radio Pittsburgh, Inc.	Pittsburgh Radio Marine Opr.
WCM	N. Huntingdon, Pa.	26	WCM Radio Pittsburgh, Inc.	Pittsburgh Marine Opr.
CUMBERLAND RIVER				
KLK 281	Nashville, Tenn.	26	Nashville Mobilphone Co., Inc.	(Call sign only)
INLAND WATERS IN THE VICINITY OF CHATTANOOGA, TENN.				
KQU 618	Signal Mountain, Tenn.	26	Southeast Mobilphone, Inc.	(Call sign only)

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
ALLATOONA LAKE/LAKE LANIER				
KUZ 552	Cumming, Ga.	26	Autophone of Gainesville, Inc.	(Call sign only)
KSK 374	Marietta, Ga.	27	William Garrett Driskell	(Call sign only)
TENNESSEE VALLEY AUTHORITY LAKES				
KQU 377	Knoxville, Tenn.	26	Southeast Mobilphone, Inc.	(Call sign only)
ST. JOHNS RIVER				
KUF 731	Palatka, Fla.	25	Chawilla, Inc.	(Call sign only)
MONONGAHELA RIVER				
KGW 323	Uniontown, Pa.	28	Bell Telephone Co. of Pennsylvania	Uniontown Marine Opr.
NEW YORK STATE BARGE CANAL				
KLU 788	Rochester, N.Y.	25	Tel-Page Corporation	Rochester Channel 25
KGW 418	Newark, N.Y.	28	New York Telephone Co.	Newark Marine Opr.
KGW 416	Syracuse, N.Y.	25	New York Telephone Co.	Syracuse Marine Opr.
KGW 415	Utica, N.Y.	28	New York Telephone Co.	Utica Marine Opr.
KFL 993	Schenectady, N.Y.	26	Tri-City Telephone Co.	(Call sign only)
LAKE CHAMPLAIN				
KGW 417	West Beekmantown, N.Y.	28	New York Telephone Co.	Plattsburgh Marine Opr.
LAKE WINNIPESAUKEE				
KTA 456	Sanbornton, N.H.	25	Comex, Inc.	Winnepesaukee Marine Opr.

Call Sign	Service Area	VHF Channel	Licensee	Marine Operator Identification
KLG 325	Fishkill, N.Y.	27	HUDSON RIVER Tri-City Telephone Company	(Call sign only)
KGB 738	Philadelphia, Pa.	26	DELAWARE RIVER Bell Telephone of Pennsylvania	Philadelphia Marine Opr.
KTA 453	Bethesda, Md.	28	POTOMAC RIVER Radio Communications, Inc.	Washington Marine Opr.
KTA 454	Hamilton, Ohio	85	MIAMI RIVER (OHIO) Miami Valley Radiotelephone	(Call sign only)

APPENDIX C—NOAA WEATHER STATIONS

Location	WX Channel	Location	WX Channel
ALABAMA		CALIFORNIA	
Anniston	SEL 3	Coachella	SEL 2
Birmingham	1	Crescent City, CA/	1
Dozier	1	Brookings, OR	1
Florence	3	Eureka	2
Huntsville	2	Fresno	2
Louisville	3	Los Angeles	1
Mobile	1	Monterey	2
Montgomery	2	Point Arena	2
Tuscaloosa	2	Sacramento	2
		San Diego	2
ALASKA		San Francisco	1
Anchorage	1	San Luis Obispo	1
Cordova	1	Santa Barbara	2
Fairbanks	1		
Homer	2	COLORADO	
Juneau	1	Denver	1
Ketchikan	1		
Kodiak	1	CONNECTICUT	
Nome	1	Hartford	3
Petersburg	1	Meriden	2
Seward	1	New London	1
Sitka	1		
Valdez	1	DELAWARE	
Wrangell	2	Lewes	1
Yakutat	1		
		DISTRICT OF COLUMBIA	
ARIZONA		Washington, D.C.	1
Phoenix	1		
ARKANSAS		FLORIDA	
*Alco	—	Daytona Beach	2
Fayetteville	3	*Fort Meyers	—
Fort Smith	2	Gainesville	3
Gurdon	3	Jacksonville	1
Jonesboro	1	Key West	2
Little Rock	1	Melbourne	1
Star City	2	Miami	1
Texarkana	SEL 1	Orlando	3
		Panama City	1
		Pensacola	SEL 2

* Asterisk indicates weather channel assignment not available at time of printing.

Location	WX Channel	Location	WX Channel
FLORIDA (Cont)		IOWA	
Tallahassee	SEL 2	Des Moines	SEL 1
Tampa	↑ 1	*Dubuque	—
West Palm Beach	2	*Waterloo	—
GEORGIA		KANSAS	
Albany	1	Wichita	1
Athens	2	KENTUCKY	
Atlanta	1	Ashland	1
Augusta	1	Bowling Green	2
Chatsworth	2	Covington	1
Columbus	2	Hazard	3
Macon	3	Lexington	2
Savannah	2	Louisville	3
Waycross	3	Mayfield	3
HAWAII		Somerset	1
Hilo	1	Elizabethtown	2
Honolulu	1	(Translator)	
Kokee	2	LOUISIANA	
Mt. Haleakala	2	*Alexandria	3
IDAHO		Baton Rouge	2
Boise	1	*Burras	—
ILLINOIS		Lafayette	3
Champaign	1	Lake Charles	1
Chicago	1	Morgan City	3
Moline	1	New Orleans	1
*Mt. Vernon	—	Monroe	1
Peoria	3	Shreveport	2
*Quincy	—	MAINE	
Rockford	3	Ellsworth	2
Springfield	2	Portland	1
INDIANA		MARYLAND	
Evansville	1	Baltimore	2
Fort Wayne	1	Salisbury	2
Indianapolis	1	MASSACHUSETTS	
Lafayette	3	Boston	2
South Bend	2	Hyannis	SEL 1
*Terre Haute	SEL —		

Location	WX Channel	Location	WX Channel
MICHIGAN		NEVADA	
Alpena	SEL 1	Reno	SEL 1
Detroit	1	NEW HAMPSHIRE	
Flint	2	Concord	3
Grand Rapids	1	NEW JERSEY	
Marquette	1	Atlantic City	2
Sault Sainte Marie	1	NEW MEXICO	
Traverse City	2	Albuquerque	2
MINNESOTA		Clovis	3
Duluth	1	Farmington	3
International Falls	1	Hobbs	2
Mankato	2	Ruidoso	1
Minneapolis	1	Santa Fe	1
Rochester	3	NEW YORK	
Thief River Falls	1	Buffalo	1
Willmar	2	New York City	1
MISSISSIPPI		Rochester	2
Ackerman	3	NORTH CAROLINA	
Booneville	1	Cape Hatteras	1
Bude	1	New Bern	2
Gulfport	2	Wilmington	1
Inverness	1	NORTH DAKOTA	
Jackson	2	Fargo	3
McHenry	3	OHIO	
Meridian	1	Akron	2
Oxford	2	Caldwell	3
MISSOURI		Cleveland	1
Camdenton	1	Columbus	1
Columbia	3	Dayton	3
Joplin	1	Lima	2
Kansas City	1	Sandusky	2
St. Joseph	2	*Toledo	—
St. Louis	1	OKLAHOMA	
Springfield	2	Clinton	3
MONTANA		Enid	3
Great Falls	1	Lawton	1
Helena	2	McAlester	3
NEBRASKA		Oklahoma City	2
Omaha	SEL 2	Tulsa	SEL 1

Location	WX Channel	Location	WX Channel
OREGON		TEXAS (Cont)	
Astoria	SEL 2	Brownsville	SEL 1
Coos Bay	2	Bryan	1
Eugene	2	Corpus Christi	1
Newport	1	Dallas	2
Portland	1	Del Rio	2
PENNSYLVANIA		El Paso	1
Erie	2	Fort Worth	1
Philadelphia	3	Galveston	1
Pittsburgh	1	Houston	2
PUERTO RICO		Laredo	3
San Juan	2	Lufkin	2
*Mayaguez	—	Lubbock	2
RHODE ISLAND		Midland	2
Providence	2	Paris	1
SOUTH CAROLINA		Pharr	2
Beaufort	3	San Angelo	1
Charleston	1	San Antonio	1
Columbia	2	Sherman	3
Florence	1	Tyler	3
Greenville	1	Victoria	2
Myrtle Beach	2	Waco	3
TENNESSEE		Wichita Falls	3
Bristol	1	UTAH	
Chattanooga	1	Salt Lake City	1
Knoxville	3	VERMONT	
Memphis	3	Burlington	2
Nashville	1	VIRGINIA	
Camden	2	Norfolk	1
Cookville	2	Richmond	3
Jackson	1	WASHINGTON	
Shelbyville	3	Neah Bay	1
TEXAS		Seattle	1
Abilene	2	Yakima	1
Amarillo	1	WEST VIRGINIA	
Austin	2	Charleston	2
Beaumont	3	Clarksburg	SEL 1
Big Spring	SEL 3		

Location	WX Channel	Location	WX Channel
WISCONSIN		WISCONSIN (Cont)	
Eau Claire	SEL 2	Madison	SEL 1
Green Bay	SEL 1	Milwaukee	SEL 2
La Crosse	SEL 1	Wausau	SEL 3

APPENDIX D—THE FCC AND YOU

LICENSE REQUIREMENTS.

You will need two Federal licenses, ship station and operator, for the use of your marine radiotelephone unit. They are both issued by the Federal Communications Commission (FCC), and at the time this was written there was no charge or fee for either license. Because the maritime radio service is constantly changing, the rules under which it operates must necessarily be modified from time to time. Therefore, you are cautioned to check the continued accuracy of the regulatory material in this manual against the latest edition of the Federal Communications Commission "Part 81 Stations on Land in the Maritime Services," and "Part 83 Stations on Shipboard in the Maritime Services." All ship radio stations are required to have a copy of these publications. They may be purchased on a subscription basis by ordering Volume IV of the FCC Rules and Regulations from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. All users should exercise caution in regard to licenses, operating, and log keeping. Commercial and compulsorily equipped vessels will find that requirements vary considerably, depending on waters navigated and the type of voyage. Be safe and obtain your copy of Parts 81 and 83—FCC Rules and Regulations. If additional information is required, consult your local FCC Field Office.

Ship Station Licenses. All radio stations aboard vessels must be licensed by the FCC. This license cannot be transferred from vessel to vessel or person to person. Ship stations are licensed primarily for the safety of life and property; therefore, distress and safety

communications must have absolute priority. The licensee is responsible at all times for the lawful and proper operation of his station. Application for a ship station license is made on FCC Form 502 (supplied). This form may also be obtained from any FCC Field Office. The completed and signed application should be sent to the Federal Communications Commission, P.O. Box 1040, Gettysburg, Pennsylvania 17325. Application processing time is approximately 6 to 8 weeks. The regular term of a ship station license is 5 years.

The Commission realizes that some individuals may want to start operating their radiotelephones immediately and not wait the 6- to 8-week processing time. To meet this need, the applicant or his representative must appear in person at the nearest FCC Field Office and file a properly completed application (FCC Form 502), then request an interim ship station license. This license, valid for 6 months from the date of issuance, permits the applicant to operate his ship radiotelephone station while awaiting receipt of the regular term license. The regular term license will be mailed to the licensee prior to the expiration of the interim permit. An interim license does not apply to renewal applications.

Renewal of Ship Station License. An application for renewal of a ship radiotelephone station license is made on FCC Form 405-B. This form is ordinarily mailed to the station licensee 60 days before the expiration date of his license. If the form has not been received 30 days before expiration of current license, FCC Form 405-B may be obtained upon request from any FCC office. Application for renewal must be received by the Commission prior to the expiration date of the station license. Applicants who file for

renewal before the license expiration date may continue operating after the license expiration date until the application for renewal is acted on by the Commission.

NOTE

The licensee must promptly notify the FCC when the name or mailing address of the licensee is changed, or in the event that the vessel name is changed. This notice, which may be in letter form, should be sent to the Federal Communications Commission, P.O. Box 1040, Gettysburg, Pennsylvania 17325. A copy of the letter should be posted with the station license.

Operator Permit or License. The radiotelephone transmitter in a ship station may be operated only by a person holding an operator permit or license. The authorized operator may permit others to speak over the microphone if he starts, supervises, and ends the operation; makes the necessary log entries; and gives the necessary identification. The authorization usually held by a radio operator aboard small vessels is the Restricted Radiotelephone Operator Permit. The Restricted Radiotelephone Operator Permit is the minimum authorization required for the operation of a ship station. Neither the Restricted Radiotelephone Operator Permit nor the Third Class Radiotelephone Operator Permit allows the operator to make any transmitter adjustments that may affect the proper operation of the station. Any such adjustments must be made only by the holder of a First- or Second-Class Radiotelegraph or Radiotelephone License. The Restricted Radiotelephone Operator Permit or verification card of a higher class license must be posted at

the operating location or kept on the operator's person.

An application for a Restricted Radiotelephone Operator Permit is made on FCC Form 753 (supplied). The completed form is sent to the Federal Communications Commission, P.O. Box 1050, Gettysburg, Pennsylvania 17325. No oral or written examination is required. Applicants must be at least 14 years of age. Field Offices will accept applications if the applicant makes a satisfactory showing of immediate need for the permit and if the application (Form 753) is presented in person by the applicant. The Restricted Radiotelephone Operator Permit is issued for the lifetime of the licensee.

SHIP RADIO STATION LOG SHEET (Recreational Vessels)

Page No. _____ Name of Vessel _____ Radio Call _____

[illegible]¹ Log: Day, Month, Year

² Use GMT or Local Time. Show which used. Use 24-hour system; that is, 8:45 a.m. is entered as 0845, and 2:15 p.m. is 1415.

³ Log time when radiotelephone is turned on and when turned off.

⁴ Log VHF Channel 16 (156.800 MHz)

⁵ Record as completely as possible all distress communications transmitted or intercepted and all urgency and safety communications transmitted. Retain logs for at least 1 year; for 3 years if they include entries related to distress; longer if they concern communications being investigated by the FCC or against which claims or complaints have been filed.

Page No. _____ Name of Vessel _____ Radio Call _____

Include record of installations, repairs, adjustments and service performed by FCC licensed Radiotelegraph or Radiotelephone 1st or 2nd Class Radio Operator. Special endorsement is required for Radar installation and repair.

ONE YEAR LIMITED WARRANTY
TEXAS INSTRUMENTS MARINE PRODUCTS*

WARRANTEE: This Texas Instruments Marine Products warranty extends to the original purchaser of the Marine Product.

WARRANTY DURATION: This Texas Instruments Marine Product is warranted to the original purchaser for a period of one (1) year from the original purchase date for materials and six (6) months for labor.

WARRANTY COVERAGE: This Texas Instruments Marine Product is warranted against defective materials or workmanship. THIS WARRANTY IS VOID IF: (i) THE MARINE PRODUCT HAS BEEN DAMAGED BY ACCIDENT OR UNREASONABLE USE, NEGLIGENCE, IMPROPER SERVICE, SERVICE BY UNAUTHORIZED PERSONNEL, OR OTHER CAUSES NOT ARISING OUT OF DEFECTS IN MATERIAL OR WORKMANSHIP, (ii) THE SERIAL NUMBER HAS BEEN ALTERED OR DEFACED.

WARRANTY PERFORMANCE: During the above one (1) year material and six (6) months labor warranty period, your Marine Product will either be repaired or replaced with a reconditioned model of an equivalent quality (at TI's option) when the Marine Product is returned postage or freight prepaid and insured to an authorized Texas Instruments Servicing Dealer or, if dealer service is unavailable, to the Texas Instruments Factory Service Center listed below. If the unit is replaced with a reconditioned model, the reconditioned unit will carry either the remaining warranty of the original unit or a warranty of 90 days on labor and 90 days on material (whichever is longer). Other than the postage (or freight) and insurance requirement, no charge will be made for such repair, adjustment, and/or replacement. Any additional warranty service offered by any dealer including, but not limited to, in-vessel service is the sole responsibility of the dealer making such offer and is not part of this Texas Instruments warranty.

WARRANTY DISCLAIMERS: ANY IMPLIED WARRANTIES ARISING OUT OF THIS SALE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE ABOVE ONE (1) YEAR MATERIAL AND SIX (6) MONTHS LABOR PERIOD. TEXAS INSTRUMENTS SHALL NOT BE LIABLE FOR LOSS OF USE OF THE MARINE PRODUCTS OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES, OR DAMAGES INCURRED BY THE PURCHASER.

*Texas Instruments Marine Products include the Texas Instruments 9000 Series Loran C Receivers and the Texas Instruments 2000, and 2100 Series VHF-FM Marine Transceivers.

Some states do not allow the exclusion or limitation of implied warranties or consequential damages, so the above limitations or exclusions may not apply to you.

LEGAL REMEDIES: This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

**TEXAS INSTRUMENTS MARINE PRODUCTS
FACTORY SERVICE CENTER
P.O. BOX 226080, MS 3107
DALLAS, TEXAS 75266**

Serial Number: _____

Date Purchased: _____

Dealer Name and Address: _____

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